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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Revised Critical Habitat
for the Riverside Fairy Shrimp; Proposed Rule

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17**

[Docket No. FWS-R8-ES-2011-0013; MO 92210-0-009]

RIN 1018-AX15

Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Riverside Fairy Shrimp

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to revise the currently designated critical habitat for the Riverside fairy shrimp (*Streptocephalus woottoni*) under the Endangered Species Act of 1973, as amended (Act). The current critical habitat consists of 306 acres (124 hectares) of land in four units in Ventura, Orange, and San Diego Counties, California. We now propose to designate approximately 2,984 acres (1,208 hectares) of land in five units in Ventura, Orange, Riverside, and San Diego Counties, California, which, if finalized as proposed, would result in an increase of approximately 2,678 acres (1,084 hectares) of critical habitat for this species.

DATES: We will consider comments received or postmarked on or before August 1, 2011. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by July 18, 2011.

ADDRESSES: You may submit comments by one of the following methods:

(1) Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments to Docket Number FWS-R8-ES-2011-0013.

(2) U.S. mail or hand-delivery: Public Comments Processing, Attn: FWS-R8-ES-2011-0013; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS2042; Arlington, VA 22203.

We will not accept e-mail or faxes. We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the **Public Comments** section below for more information).

FOR FURTHER INFORMATION CONTACT: Jim Bartel, Field Supervisor, U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011;

telephone 760-431-9440; facsimile 760-431-5901. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Public Comments

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned government agencies, the scientific community, industry, or other interested party concerning this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not revise the designation of habitat as “critical habitat” under section 4 of the Act (16 U.S.C. 1531 *et seq.*), including whether there are threats to the species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(2) Specific information on:

(a) The amount and distribution of Riverside fairy shrimp habitat;

(b) What areas occupied at the time of listing (or currently occupied) and containing features essential to the conservation of the species, should be included in the designation and why;

(c) What areas not occupied at the time of listing are essential for the conservation of the species and why;

(d) Special management considerations or protection that the features essential for the conservation of the species may require, including management for potential impacts associated with climate change; and

(e) Areas identified in this proposed revised critical habitat rule that should not be proposed as critical habitat and why.

(3) Land-use designations and current or planned activities in the subject areas and their possible impacts on proposed revised critical habitat.

(4) Information that may assist us in identifying or clarifying the physical and biological features essential to the conservation of Riverside fairy shrimp.

(5) Special management considerations or protection that the physical and biological features essential to the conservation of the species may require.

(6) Specific information regarding the occurrence, or non-occurrence, of Riverside fairy shrimp in the Cruzan

Mesa vernal pools (in Los Angeles County) and, if the species is present, whether this area is essential to the conservation of the species and if so, whether the area should be considered for exclusion under section 4(b)(2) of the Act and why.

(7) Specific information on the habitat conditions for Riverside fairy shrimp and the presence of physical and biological features essential for the conservation of the species in Subunit 1b (South of Tierra Rejada Valley, which is in Ventura County), and whether this area is essential to the conservation of the species and why.

(8) Specific information regarding the occurrence of Riverside fairy shrimp within proposed Subunit 3h (Santa Rosa Plateau at Mesa de Colorado, which is in western Riverside County), whether this area is essential to the conservation of the species, and if so, whether the area should be considered for exclusion under section 4(b)(2) of the Act and why.

(9) Specific information regarding a potential occurrence of Riverside fairy shrimp at Madrona Marsh (Los Angeles County) and, if the species is present, whether this area is essential to the conservation of the species and why.

(10) Specific information regarding the presence or absence of the physical and biological features essential to the conservation of the species within proposed Subunit 5c, and whether this area is essential to the conservation of the species and why.

(11) Information on the projected and reasonably likely impacts associated with climate change on Riverside fairy shrimp and the areas we are proposing to designate as critical habitat.

(12) How the proposed revised critical habitat boundaries could be refined to more closely circumscribe the landscapes identified as containing the physical and biological features essential to the conservation of the Riverside fairy shrimp.

(13) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation; in particular, any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

(14) Whether the potential exclusion under section 4(b)(2) of the Act of Subunits 2c ((MCAS) El Toro) and 2i (Southern California Edison (SCE) Viejo Conservation Bank), which are covered by the Orange County Central-Coastal Natural Community Conservation Plan/Habitat Conservation Plan (Orange County Central-Coastal NCCP/HCP), from final revised critical habitat is or

is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(15) Whether the potential exclusion under section 4(b)(2) of the Act of a portion of Subunit 2dA (Saddleback Meadows); portions of Subunit 2dB (O'Neill Regional Park—near Trabuco Canyon) and 2e (O'Neill Regional Park—near Cañada Gobernadora/east of Tijeras Creek); and Subunits 2f (Chiquita Ridge) and 2g (Radio Tower Road), which are covered by the Southern Orange County Natural Community Conservation Plan (NCCP)/Master Streambed Alteration Agreement/Habitat Conservation Plan (HCP), now known as the Orange County Southern Subregion HCP, from final revised critical habitat is or is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(16) Whether the potential exclusion under section 4(b)(2) of the Act of Subunits 3c, 3d, 3e, 3f, 3g, and 3h, which are covered by the Western Riverside County Multiple Species Habitat Conservation Plan (the Western Riverside County MSHCP) from final revised critical habitat is or is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(17) Whether the potential exclusion under section 4(b)(2) of the Act of Subunit 4c (Poinsettia Lane Commuter Station) as critical habitat covered by the Carlsbad Habitat Management Plan (Carlsbad HMP), a subarea plan under the Multiple Habitat Conservation Program (MHCP), from final revised critical habitat is or is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(18) Whether the potential exclusion under section 4(b)(2) of the Act—portions of Subunit 5d, which is covered by the County of San Diego Subarea Plan under the San Diego Multiple Species Conservation Program (MSCP) from final revised critical habitat is or is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(19) Although we are not proposing areas within tribal lands in this proposed rule, we seek specific information regarding the possible species occurrence within two vernal pools on or near tribal land of the Pechanga Band of Luiseño Mission

Indians of the Pechanga Reservation, California (Pechanga Band of Luiseño Mission Indians), and, if the species is present, whether this area is essential to the conservation of Riverside fairy shrimp and why.

(20) Although we are not considering for exclusion lands owned by the Department of Homeland Security (DHS) along the U.S.-Mexico border in this proposed rule (Subunit 5b and a portion of land in 5h), we seek comments on whether or not these lands should be considered for exclusion under section 4(b)(2) of the Act of Federal land for national security reasons, whether such exclusion is or is not appropriate, and whether the benefits of excluding any specific area outweigh the benefits of including that area as critical habitat and why.

(21) Whether our exemption, under section 4(a)(3)(B) of the Act, of land on Department of Defense property at Marine Corps Base (MCB) Camp Pendleton and Marine Corps Air Station (MCAS) Miramar in San Diego County is or is not appropriate, and why.

(22) Whether the benefit of exclusion of any other particular area not specifically identified above outweighs the benefit of inclusion under section 4(b)(2) of the Act.

(23) Information on any quantifiable economic costs or benefits of the proposed revised designation of critical habitat.

(24) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate concerns and comments.

Our final determination concerning the revision of Riverside fairy shrimp critical habitat will take into consideration all written comments and any additional information we receive during all comment periods. The comments will be included in the public record for this rulemaking, and we will fully consider them in the preparation of our final determination. On the basis of public comments, we may, during the development of our final determination, find that areas within the proposed designation do not meet the definition of critical habitat, that some modifications to the described boundaries are appropriate, or that areas may or may not be appropriate for exclusion under section 4(b)(2) of the Act.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not accept comments sent by e-mail or fax or to an address not listed in the **ADDRESSES**

section. We will post your entire comment—including your personal identifying information—on <http://www.regulations.gov>. You may request at the top of your document that we withhold personal information such as your street address, phone number, or e-mail address from public review; however, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <http://www.regulations.gov>, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

It is our intent to discuss only those topics directly relevant to the proposed revision of critical habitat for Riverside fairy shrimp. This proposed rule incorporates new information specific to Riverside fairy shrimp genetics across the species' range that was not available when we completed our 2005 final critical habitat designation (70 FR 19154; April 12, 2005), and new information on the status and distribution of Riverside fairy shrimp that became available since the 2005 final critical habitat designation for this species. A summary of topics that are relevant to this proposed revised critical habitat designation is provided below. For more information on the taxonomy, biology, and ecology of Riverside fairy shrimp, please refer to the final listing rule published in the **Federal Register** on August 3, 1993 (58 FR 41384); the first and second rules proposing critical habitat published in the **Federal Register** on September 21, 2000 (65 FR 57136), and April 27, 2004 (69 FR 23024), respectively; and the subsequent final critical habitat designations published in the **Federal Register** on May 30, 2001 (66 FR 29384), and April 12, 2005 (70 FR 19154). Additionally, more species information can be found in the 1998 Recovery Plan for the Vernal Pools of Southern California (1998 Recovery Plan) finalized on September 3, 1998 (Service 1998a, pp. 1–113), in the City of San Diego's 2002–2003 Vernal Pool Inventory (City of San Diego 2004, pp. 1–125), and in the Riverside fairy shrimp 5-year review (Service 2008, pp. 1–57).

Species Description

The Riverside fairy shrimp is a small (0.56 to 0.92 inch (in)) (14 to 23 millimeter (mm)) aquatic crustacean in the order Anostraca, restricted to

seasonal (vernal) pools, ponds, swales, and other pool-like, ephemeral (lasting a short time) water bodies in southern coastal California, United States, and northern Baja California, Mexico (Eng *et al.* 1990, pp. 258–259). Riverside fairy shrimp, like all fairy shrimp in general, have stalked compound eyes, no carapace (hard outer shell), and eleven pairs of phyllopods (swimming legs that also function as gills). They swim or glide upside down by means of complex beating movements of the legs that pass, wave-like, in an anterior to posterior direction. Male and females have red-colored cercopods (anterior appendages) on all of the ninth and 30 to 40 percent of the eighth abdominal segments, which helps to distinguish this species from closely related species (Eng *et al.* 1990, p. 259).

First collected in 1979 and described as a new species by Eng *et al.* (1990, pp. 258–259), based on a type specimen collected from an area between Murrieta Golf Course and California Highway 79 in Riverside County (71 FR 14538), Riverside fairy shrimp are currently presumed to occupy 60 or fewer pool complexes throughout southern California (see *Spatial Distribution and Historical Range* below). At the time the species was listed as endangered in 1993, the type locality had been lost to development (Eriksen and Belk 1999, p. 104; Service 2008, p. 5).

Habitat

Typical habitat for fairy shrimp in California includes vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats (68 FR 46685). Riverside fairy shrimp are considered habitat specialists, found in moderate to deep (generally ranging from 10 inches (in) (25.4 centimeters (cm)) to 5 to 10 feet (ft) (1.5 to 3 meters (m)) in depth), longer-lived vernal pools and ephemeral wetlands (Eng *et al.* 1990, p. 259; Simovich and Fugate 1992, pp. 7–8; Hathaway and Simovich 1996, p. 39) because of specific life-history traits and habitat needs (see *Life History* section below).

Riverside fairy shrimp's known localities are below 2,100 ft (640 m) elevation and are within 50 miles (mi) (80 kilometers (km)) of the Pacific Ocean. Riverside fairy shrimp do not occur in riverine or marine waters or other permanent bodies of water. Water chemistry is an important factor in determining fairy shrimp distribution (Belk 1977, p. 77; Gonzales *et al.* 1996, p. 319). As previously described in the final listing rule (58 FR 41384; August 3, 1993) and the Background section of the final revised critical habitat rule (70

FR 19154; April 12, 2005), vernal pool habitats that support Riverside fairy shrimp occur in areas with Mediterranean climates (cool, wet winters and hot, dry summers), where shallow depressions become seasonally wet or inundated following winter and spring rains (Keeley and Zedler 1998, p. 2; Smith and Verrill 1998, p. 15). In general, vernal pools occur as poorly drained depressions, perched above an impermeable surface or very slowly permeable soil horizon or bedrock (Cheatham 1976, p. 88; Smith and Verrill 1998, p. 15); restrictive soil layers are typically hardpan or claypan, and bedrock types are volcanic mud or lava flows (Jones and Stokes 1987, p. 70; Zedler 1987, p. 13; Smith and Verrill 1998, p. 15). Other kinds of depressions that hold water of a similar volume, depth, and area, and for a similar duration and seasonality as vernal pools and ponded areas within swales, may also provide potential habitat for Riverside fairy shrimp.

Vernal pools may fill primarily by direct precipitation, or may have contributions from subsurface inflows from surrounding soils, which may help to minimize water level fluctuations during late winter and early spring (Hanes and Stromberg 1998, p. 48; Rains *et al.* 2006, p. 1158). Although vernal pools may typically associate with specific types of geological formations, landforms, and soils and within different types of ephemeral wetland landscapes (Zedler 1987, p. 13; Hanes and Stromberg 1998, p. 48; Smith and Verrill 1998, p. 15; Rains *et al.* 2006, p. 1158), the most common unifying feature to fairy shrimp habitat, in general, is ephemerally wet, flooded, or ponded area that is typically wet during a portion of the year and dry for the remainder of the year.

Throughout this proposed revised critical habitat rule, the term “ephemeral wetlands” refers to vernal pool habitats including vernal lakes, ponds, detention basins, and other natural and manmade depressions that seasonally hold water. While these ephemeral wetlands often occur within landscapes of “mima-mound” topography (Cox 1984, pp. 1397–1398), that is, they form during winter rains as a natural hydrological feature of a gently sloping, undulating landscape, the species can also be found in disturbed vernal pool habitats where basins have been compacted or artificially deepened and therefore hold water for longer periods of time.

Depending on topography, soils, and geographic location, the period of time varies during which these ephemeral wetlands pond (referred to as the “period of inundation”). Basin size and

basin shape (Keeley and Zedler 1998, p. 5), soil type, soil consistency, depth of soil to impervious layer (for example, hardpan or claypan), type and thickness of impervious layer, and other local and regional climatic factors (for example, rainfall abundance and timing, rainfall regularity, and evaporation rates) (Keeley and Zedler 1998, p. 2; Helm 1998, p. 136) all are variables that potentially affect the length of ponding in vernal pool landscapes. For southern California's ephemeral wetlands, the wet phase typically occurs between the months of October to May, and the dry phase lasts for a period of time between the months of June to September.

The Riverside fairy shrimp often hatches later in the season than other fairy shrimp species because presumably the deeper pools it inhabits require sufficient rainfall to fill (Simovich and Fugate 1992, p. 8). A minimum period of inundation, or pool duration, that Riverside fairy shrimp need in order to hatch and reach sexual maturity is approximately 8 weeks (48 to 56 days) based on field observations (Hathaway and Simovich 1996, p. 674) (see *Life History* section below for further discussion).

Mounds of soil (mima) (Scheffer 1947, p. 288), or swales (broad, shallow, vegetated, ephemerally wet areas) (Helm 1998, p. 130), that are interconnected with level or low point depressional basins and which contain appropriate impervious clay soils (providing ponding opportunities during winter and spring), are geographically fixed and limited in number. Soils and soil series that underlie vernal pool habitat that supports Riverside fairy shrimp are generally characterized by a high content of coarse sandy grains (marine alluvial sediments), loams, or clay inclusions, or a combination of these, with a subsurface clay or hardpan layer. These are also limited in number and geographically fixed. Riverside fairy shrimp are known to occur in both hardpan and claypan vernal pools in Ventura, San Diego, Los Angeles (now extirpated), Riverside, and Orange Counties, and in addition, in Riverside County on granitic (basaltic) substrate.

Vernal pools and vernal swales are often clustered into pool “complexes” (Bauder 1986a, Appendix 1, 4; Keeler-Wolf *et al.* 1998, pp. 60–61, 63–64), and may form dense, interconnected mosaics of small pools, or a sparse scattering of larger pools. Vernal pool complexes that support from one up to many distinct vernal pools are often interconnected by a shared watershed. Both the pool basin and the surrounding watershed are essential for a functioning vernal pool system (Hanes and

Stromberg 1998, p. 48). Loss of upland vegetation, increased overland water flow due to urban runoff, and alteration of the microtopography can modify the function of vernal pool systems, and alter the physiochemical parameters that the Riverside fairy shrimp requires for survival. Because the Riverside fairy shrimp requires ephemeral ponded areas for its conservation (Belk 1998, pp. 147–148), vernal pools are best described from a watershed perspective (see *Physical and Biological Features* section below, and Recovery Criteria 1 and 2 in the 1998 Recovery Plan for Vernal Pools of Southern California (Service 1998a, pp. iv–vi)).

The size and number of inundated basins and their associated biota are directly correlated to the amount and timing of precipitation (City of San Diego 2004, p. 6). In southern California, rainfall is erratic within and between years as well as strongly seasonal (Zedler 1987, p. 12). Pool size, location and elevation, upland hydrology, physiochemical processes, and unique species assemblages may all factor into the distribution of vernal pool species (Eng *et al.* 1990, p. 273; Branchiopod Research Group 1996, pp. 1–2; Gonzalez *et al.* 1996, p. 319). Water chemistry (dissolved solutes, alkalinity, salinity, and temperature) and length of time vernal pools are inundated with water (see *Life History* section below) are important factors that potentially limit and determine the distribution of Riverside fairy shrimp within and among pools complexes.

Water in the pools that typically support Riverside fairy shrimp has low total dissolved solids and alkalinity (means of 77 and 65 milligrams per liter (mg/l) or parts per million (ppm), respectively), corroborated by pH at neutral or just below (6.4–7.1) (Eng *et al.* 1990, p. 254; Gonzalez *et al.* 1996, p. 317; Eriksen and Belk 1999, p. 104). Riverside fairy shrimp have been shown to tightly regulate their internal body chemistry for pool environments that have low salinity and low alkalinity (Gonzalez *et al.* 1996, pp. 317–318). Pools are generally open and unvegetated with turbid water conditions; habitat lies within annual grasslands, which may be interspersed through chaparral or coastal sage scrub vegetation (Lahti *et al.* 2010, p. 5). Riverside fairy shrimp are typically found in water temperatures ranging between 50 and 77 degrees Fahrenheit (10 and 25 degrees Celsius) (Hathaway and Simovich 1996, p. 671).

Life History

As discussed in detail in the Background section of the final revised

critical habitat rule (70 FR 19154; April 12, 2005), Riverside fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of detritus, and constitute a cornerstone in the food web for a wide array of aquatic and terrestrial species.

Because vernal pool ecosystems are highly variable in the length of time pools remain filled, Riverside fairy shrimp have adapted their life-history strategies accordingly. Riverside fairy shrimp populations withstand a seasonal desiccation of their pools by producing resting eggs (herein referred to as reproductive cysts), which when mature can survive environmental conditions such as extremes in temperatures, the digestive tracts of animals, and years of desiccation before hatching under the correct environmental conditions (Pennak 1989, pp. 352–353; Eriksen and Belk 1999, p. 22). Because not all reproductive cysts will hatch with any given refilling of their pool, these reproductive cysts form a “cyst bank” in the soil from which new populations of adults may develop, even in pools that have not had adults for years (Eriksen and Belk 1999, p. 105). Therefore, it is not mandatory for ideal conditions to exist every year for this species to persist.

Adult Riverside fairy shrimp are usually observed from mid-March to April (Eng *et al.* 1990, p. 259); however, the hatching periods may be extended in years with early or late rainfall. Unlike San Diego fairy shrimp (*Branchinecta sandiegonensis*), a species that matures quickly (7 to 14 days), Riverside fairy shrimp hatch and mature within 48 to 56 days, depending on water temperature (Hathaway and Simovich 1996, p. 674; Simovich and Hathaway 1997, p. 39; Eriksen and Belk 1999, p. 105). Because of its distinctly longer maturation, Riverside fairy shrimp are typically restricted to relatively deep (greater than 12 in (30 cm)), cool water vernal pools that are inundated for a longer time to complete their reproductive life cycle (Hathaway and Simovich 1996, p. 675). This longer development time is thought to account for the species' restriction to deep pools, their rarity, and later appearance (Simovich and Fugate 1992, p. 8).

Spatial Distribution and Historical Range

As discussed in detail in the Background section of the final revised critical habitat rule (70 FR 19154; April 12, 2005), Riverside fairy shrimp are considered to have one of the most restricted distributions among fairy shrimps endemic to the West Coast (Eng *et al.* 1990; p. 259, Simovich and Fugate 1992, p. 7; Eriksen and Belk 1999, p.

104). Because the Riverside fairy shrimp has a slower developmental rate, the species is limited to fairly deep, and moderate in size, pools that support a longer ponding duration. The Riverside fairy shrimp is, therefore, restricted to a subset of vernal pools and vernal pool complexes in southern California (Ventura, Orange, Riverside, and San Diego Counties) and in northern Mexico (Service 1998a, p. 19; Eriksen & Belk 1999, p. 104). The Riverside fairy shrimp has likely been extirpated from Los Angeles County. With the exception of the Riverside County populations, all populations are within approximately 15 mi (24 km) of the coast. Riverside fairy shrimp range over a north-south distance of approximately 163 mi (262 km) within southern California (excluding Baja, Mexico locations) and occupy pools that range in elevation from 46 to 2,076 ft (14 to 633 m).

For the purposes of this proposed revised critical habitat designation, the word *occurrence* may be a single pool or a pool complex. Keeler-Wolf *et al.* (1998, p. 8) define a vernal pool complex as a set of naturally occurring pools in close proximity. A singular pool—geographically situated such that the pool basin is isolated from adjoining vernal pool topography by distances greater than 10 mi (16 km)—or a network of one or more vernal pool basins in close proximity, that is to say a vernal pool complex, may comprise an occurrence. At the time of listing in 1993, nine historical occurrences for Riverside fairy shrimp were known: Four occurrences in a 37-square-mile (91-square-km) area near Temecula, California (western Riverside County); one occurrence in Orange County, California; two documented occurrences in San Diego County, California; and two occurrences in Baja California, Mexico (58 FR 41384; August 3, 1993).

In our 2008 5-year review of Riverside fairy shrimp, we assembled and reassessed occurrence data for the species (Service 2008, pp. 6–8). Seven of the nine historical occurrences (five in the United States and two in Mexico) were presumed extant at the time Riverside fairy shrimp was listed in 1993 (Service 2008, pp. 7–8). The type locality in western Riverside County (at Murrieta Golf Course) was already extirpated by the time the species was listed, and the single-referenced occurrence from Orange County has never been confirmed. Based on our analysis in the 2008 5-year review for Riverside fairy shrimp, with the discovery of additional occurrences, the regrouping of vernal pool complexes, and the extirpation of nine known occurrences since listing, we concluded

that there were approximately 45 known extant (or presumed extant) occurrences (approximately 200 vernal pools) of Riverside fairy shrimp (Service 2008, p. 5). Discovery of additional occurrences since the time of the 1998 Recovery Plan, include at least four more occurrences, all in western Riverside County: Warm Springs Ranch Pool, Schau Pool, Rancho California Road Pools, and an occurrence (two pools, Pool 4 and Pool 5 in Selheim and Searcy 2010, p. 98) atop Santa Rosa Plateau along Mesa de Colorado. Identification of additional occurrences since listing (1993) has resulted from surveys conducted in locations that were not surveyed prior to 1993. In sum, Riverside fairy shrimp are presently considered to be extant in approximately 49 occurrences (vernal pools and vernal pool complexes), four more than we reported in the 2008 5-year review (Service 2008, pp. 5, 10).

Extant occurrences not identified in the 1993 listing rule (but presumed extant at the time of listing) are located in the following general areas: (1) One occurrence in Ventura County (Tierra Rejada Preserve and South of Tierra Rejada Valley); (2) seven occurrences in Orange County: (MCAS) El Toro, SCE Viejo Conservation Bank, Saddleback Meadows, O'Neill Regional Park—near Trabuco Canyon, O'Neill Regional Park—near Cañada Gobenadora/east of Tijeras Creek, Chiquita Ridge, and Radio Tower Road; (3) nine occurrences in Riverside County at the Australia Pool, the Scott Road Pool, the Warm Springs Ranch Pools, the Schleuniger Pool, the Schau Pool, in the Johnson Ranch area, the Field Pool, the Rancho California Road Pool, and a newly documented occurrence on the Santa Rosa Plateau along Mesa de Colorado; (4) ten occurrences in north San Diego County on MCB Camp Pendleton: San Onofre State Beach, State Park-leased lands, near Christianitos Creek foothills (along the northwest corner of MCB Camp Pendleton); area south of San Onofre State Beach, in Uniform Training Area; Las Pulgas North; Las Pulgas East; Las Pulgas West; Cocklebur North; Cocklebur South; Stuart Mesa; San Mateo; and Wire Mountain; and (5) seven occurrences in central and southern San Diego County, outside of MCB Camp Pendleton: on MCAS Miramar (AA1 pool); City of Carlsbad (Poinsettia Lane Commuter Train Station); and numerous pools on Otay Mesa (southern San Diego County) including what is referred to as the “J series” of vernal pool complexes (J2, J4, J5, J11, J12, J14, J15, J16–18, J29–31, J33).

For the purpose of this proposed revised critical habitat designation, we consider areas where Riverside fairy shrimp have been documented since listing (since 1993) to be within the geographical area occupied by the species at the time of listing (in 1993). As discussed in the 5-year review, most of the additional occurrences identified since listing fall generally within the range of the Riverside fairy shrimp described in the listing rule, although the identification of some occurrences (complexes) broadened the specific range within Ventura, Orange, Riverside, and San Diego Counties (Service 2008, p. 8). As with many species, listing often results in greater efforts to conduct surveys, which may reveal a greater number of occurrences than was initially known.

We believe that these additional occurrences were occupied at the time of listing but had not been identified due to lack of survey effort. We believe occurrences documented since the 1993 listing do not represent an expansion of the species' distribution and range into previously unoccupied areas (with the exception of Johnson Ranch Created Pools), but rather a better understanding of the historical distribution and range of the species (Service 2008, p. 9). Because occurrences documented since listing are within relative proximity to existing, occupied, vernal pool habitat or within similar landscape types (e.g., coastal terraces and mesas, inland valleys, inland mesas, cismontane depressions) supporting ephemeral wetlands with occurrences that were known at the time of listing, it is reasonable to conclude, based on several life-history traits, that Riverside fairy shrimp were present at the time of listing in these unsurveyed habitats.

Riverside fairy shrimp are generally sedentary and are adapted to survive and persist in seasonally ephemeral habitat. Because they are sedentary, possess limited dispersal capabilities (passive dispersal mediated by resistant stages), and exhibit specialized habitat affinities (specific habitat types with fixed landscape features, see *Life History* and *Habitat* sections of this document), we believe it is unlikely that additional occurrences have become established during the relatively short time period since the listing of this species (with the exception of Johnson Ranch Created Pools). With the exception of the land we are proposing to designate under section 3(5)(A)(ii) of the Act—Johnson Ranch Created Pools (in Riverside County), which were created after the species was listed—we consider all known occurrences to be occupied at the time of listing and

within the geographical area occupied by the species at the time of listing in this proposed critical habitat designation. Therefore, throughout this proposed rule, we refer to all occurrences (with the exception of Johnson Ranch Created Pools) as being occupied at the time of listing whether the areas were documented before or after the species was listed.

We are designating one area, Johnson Ranch Created Pools, as essential under section 3(5)(A)(ii) of the Act. Although this area falls within the currently occupied geographic range of the species, at the time Riverside fairy shrimp was listed, it was not occupied.

Each area that we are proposing as revised critical habitat contains a currently extant (or in the case of Subunit 1b, considered extant) occurrence of Riverside fairy shrimp; however, Riverside fairy shrimp do not physically occur throughout the entirety of each area. The 2,984 ac (1,208 ha) we are proposing as revised critical habitat contains occurrences of Riverside fairy shrimp as well as surrounding upland areas (the contributing watershed) that contain the physical and biological features essential to support Riverside fairy shrimp where they physically occur within the proposed revised critical habitat subunits (see *Physical and Biological Features* below). For specific information about how this proposed rule compares to the final critical habitat designated for this species in 2005, see the **Summary of Changes From Previously Designated Critical Habitat** section below.

New Information Specific to Riverside Fairy Shrimp

A study to gather genetic distribution data for Riverside fairy shrimp across its range, using mitochondrial DNA (mtDNA) on the cytochrome oxidase I (COI) gene, was conducted in 2010 (Lahti *et al.* 2010, pp. 1–47). Sequencing of 179 individuals from 32 pools comprising 20 pool complexes detected low population genetic variability overall at the selected locus, and resulted in detection of five unique haplotypes (Lahti *et al.* 2010, p. 17). A haplotype is a combination of alleles (the alternative forms of a gene that is located at a specific position on a specific chromosome) at a single locus or multiple loci that are transmitted together on the same chromosome. This was the first study of its kind to look at genetic composition and variation of Riverside fairy shrimp across its range and, as such, represents preliminary information. Most of the genetic variability was limited to San Diego County (Camp Pendleton, San Diego

north; haplotypes D, E) and Otay Mesa (San Diego south; haplotypes B, C), and all pools in Riverside and Orange Counties were fixed for the most common haplotype, haplotype A (Lahti *et al.* 2010, p. 17).

Although the amount of genetic variation was low, haplotype frequencies among complexes varied, showing approximately 60 percent of the genetic variability partitioned among pool complexes and 18 percent partitioned among regions (Lahti *et al.* 2010, p. 19). Lahti *et al.* concluded that low variation at the COI gene region does not confer definitive evidence that Riverside fairy shrimp populations are currently connected by high levels of gene flow rangewide; on the contrary in areas where genetic variation was detected, haplotype frequencies varied significantly across even geographically proximate pools, suggesting low gene flow (Lahti *et al.* 2010, p. 19). Genetic variability and genetic differentiation between and among populations (and across the species' distribution) may be important to long-term species persistence because it represents the raw material for adaptation to differing local conditions and environmental stochasticity (Frankham 2005, p. 754). The maintenance of genetic variability is crucial to the survival of a species with declining populations and a limited range, such as the Riverside fairy shrimp (Gilpin and Soule 1986, pp. 32–33; Lesica and Allendorf 1995, p. 756). Loss of genetic connectivity and diversity can hinder a population's ability to adapt to ecological perturbations commonly associated with urbanization, such as habitat degradation, climatic changes, and introduced species (Vandergast *et al.* 2007, p. 977). Vernal pool complexes throughout the range of the Riverside fairy shrimp, and within different habitat types, are critical for the conservation of this species.

Previous Federal Actions

The Riverside fairy shrimp was listed as an endangered species on August 3, 1993 (58 FR 41384). For a history of Federal actions prior to 2001, please refer to the September 21, 2000, proposed critical habitat rule (65 FR 57136). On May 30, 2001, we published a final rule designating critical habitat for the Riverside fairy shrimp (66 FR 29384). On November 6, 2001, the Building Industry Legal Defense Foundation, Foothill/Eastern Transportation Corridor Agency, National Association of Home Builders, California Building Industry Association, and Building Industry Association of San Diego County filed a

lawsuit in the United States District Court for the District of Columbia challenging the designation of Riverside fairy shrimp critical habitat and alleging errors in our promulgation of the May 30, 2001, final rule. We requested a voluntary remand, and on October 30, 2002, critical habitat for this species was vacated by order of the Federal District Court for the District of Columbia and the Service was ordered to publish a new final rule with respect to the designation of critical habitat for the Riverside fairy shrimp (*Building Industry Legal Defense Foundation, et al., v. Gale Norton, Secretary of the Interior, et al., and Center for Biological Diversity, Inc. and Defenders of Wildlife, Inc.* Civil Action No. 01–2311 (JDB) (U.S. District Court, District of Columbia)).

On April 27, 2004, we again proposed to designate critical habitat for the Riverside fairy shrimp (69 FR 23024). The final critical habitat published in the **Federal Register** on April 12, 2005 (70 FR 19154). On January 14, 2009, the Center for Biological Diversity filed a complaint in the U.S. District Court for the Southern District of California challenging our 2005 designation of critical habitat for Riverside fairy shrimp (*Center for Biological Diversity v. United States Fish and Wildlife Service and Dirk Kempthorne, Secretary of the Interior*, Case No. 3:09–CV–0050–MMA–AJB). A settlement agreement was reached with the plaintiffs (Case No. 3:09–cv–00051–JM–JMA; November 16, 2009) in which we agreed to submit a proposed revised critical habitat designation for the Riverside fairy shrimp to the **Federal Register** by May 20, 2011, and submit a final revised critical habitat designation to the **Federal Register** by November 15, 2012.

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

- (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features
 - (a) Essential to the conservation of the species and
 - (b) Which may require special management considerations or protection; and
- (2) Specific areas outside the geographical 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.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management, such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot otherwise be relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain physical and biological features which are essential to the conservation of the species, and it is included only if those features may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life-history needs of the species, including but not limited to areas which provide for space, food, cover, and protected habitat.

Under the Act, we can designate critical habitat in areas outside the

geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species. When the best available scientific data do not demonstrate that the conservation needs of the species require such additional areas, we will not designate critical habitat in areas outside the geographical area occupied by the species. An area currently occupied by the species but that was not occupied at the time of listing may, however, be essential to the conservation of the species and may be included in the critical habitat designation.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as revised critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources include the 1998 Recovery Plan and the 2008 5-year review for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat and species are often dynamic in that both may shift naturally within an area or from one area to another over time. Climate change will be a particular challenge for biodiversity because the interaction of additional stressors associated with climate change and current stressors may push species beyond their ability to survive (Lovejoy

2005, pp. 325–326). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah *et al.* 2005, p. 4). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 1–3; Hayhoe *et al.* 2004, p. 12422; Cayan *et al.* 2005, p. 6; Intergovernmental Panel on Climate Change (IPCC) 2007, p. 1181). Climate change may lead to increased frequency and duration of severe storms and droughts (McLaughlin *et al.* 2002, p. 6074; Cook *et al.* 2004, p. 1015; Golladay *et al.* 2004, p. 504). The southwestern region of the country is predicted to become drier and hotter overall (Hayhoe *et al.* 2004, p. 12424; Seager *et al.* 2007, p. 1181). Predictions of climatic conditions for smaller subregions such as California are less certain.

Documentation of climate-related changes that have already occurred in California (Croke *et al.* 1998, pp. 2128, 2130; Brashears *et al.* 2005, p. 15144), and future drought predictions for California (e.g., Field *et al.* 1999, pp. 8–10; Lenihen *et al.* 2003, p. 1667; Hayhoe *et al.* 2004, p. 12422; Brashears *et al.* 2005, p. 15144; Seager *et al.* 2007, p. 1181) and North America (IPCC 2007, p. 9), indicate prolonged drought and other climate-related changes will continue in the foreseeable future. While climate change was not discussed in the 1993 listing rule, drought was noted in the rule as a stochastic (random or unpredictable) event that could have drastic effects on Riverside fairy shrimp, given its fragmented and restricted range (58 FR 41384, p. 41389, August 3, 1993; Service 1998a, p. 34). The magnitude and frequency with which local climate-related changes or drought-induced impacts may negatively affect limited ephemeral wetland habitats, in terms of their seasonal timing, ponding durations, or patterns of inundation and dry down, remains untested.

In southern California, climatic variables affecting vernal pool habitats are most influenced by distance from the coast, topography, and elevation (Bauder and McMillian 1998, p. 64). As presence and persistence of Riverside fairy shrimp appear to be associated with precipitation patterns, draw-down factors, and other regional climatic factors including aridity (Eriksen and Belk 1999, p. 71), the likely impacts of climate change on ecological processes for Riverside fairy shrimp are most

closely tied to availability and persistence of ponded water during the winter and spring. Vernal pools are particularly sensitive to slight increases in evaporation or reductions in rainfall due to their relative shallowness and seasonality (Field *et al.* 1999, p. 19). Based on existing data, weather conditions in which vernal pool flooding promotes hatching, but in which pools become dry (or too warm) before embryos are fully developed, are expected to have the greatest negative impact on Riverside fairy shrimp resistance and resilience. In the 2008 5-year review, we noted that climate change may potentially cause changes in vernal pool inundation patterns and pool consistency and that drought may decrease or terminate reproductive output if pools fail to flood, or if pools dry up before reproduction is complete (Service 1998a, p. 34). Long-term or continuing drought conditions may deplete cyst banks in affected pools as new reproductive cysts are not deposited. Additionally, localized climate-related changes may alter the temporal spatial array of occupied habitat patches (across and between pool complexes) across the species' geographical range. The ability of Riverside fairy shrimp to survive is likely to depend in part on their ability to disperse to pools where conditions are suitable (Bohonak and Jenkins 2003, p. 786) through passive dispersal mechanisms utilizing reproductive cysts (see *Life History* section above).

The information currently available on the effects of global climate change and increasing temperatures does not adequately predict the location and magnitude of climate change effects to Riverside fairy shrimp; therefore, we are unable to determine if any additional areas may be appropriate to include in this proposed revised critical habitat designation to address the effects of climate change. We specifically request information from the public on the currently predicted effects of climate change on Riverside fairy shrimp and its habitat. Furthermore, we recognize that designation of critical habitat may not include all habitat areas that we may eventually determine are necessary for the recovery of the species, based on scientific data not now available to the Service. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not promote the recovery of the species.

Areas that support populations of Riverside fairy shrimp, but are outside the critical habitat designation, will continue to be subject to conservation actions we and other Federal agencies

implement under section 7(a)(1) of the Act. They are also subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available information at the time of the agency action. Federally funded or permitted 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 (HCPs), section 7 consultations, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

Physical and Biological Features

In accordance with sections 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied at the time of listing to propose as revised critical habitat, we consider those physical and biological features that are essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

- (1) Space for individual and population growth and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, and rearing (or development) of offspring; and
- (5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific physical and biological features required for Riverside fairy shrimp from studies of this species' habitat, ecology, and life history as described below. Additional information can be found in the final listing rule published in the **Federal Register** on August 3, 1993 (58 FR 41384), and the 1998 Recovery Plan (Service 1998a). We have determined that the Riverside fairy shrimp requires physical and biological features described below.

Space for Individual and Population Growth and for Normal Behavior

Riverside fairy shrimp require vernal pool habitat to grow and reproduce. Their life cycle requires periods of inundation as well as dry periods

(Ripley *et al.* 2004, pp. 221–223). Habitats (ephemeral wetlands) that provide space for growth and persistence of Riverside fairy shrimp include areas that generally pond for 2 to 8 months and dry down for a period during the late spring to summer months. Habitats include natural and manmade pools (usually >12 in (30 cm) deep) which support these longer inundation periods; some of these habitats are artificial pools (cattle tanks and road embankments) which have been modified or deepened with berms (Hathaway and Simovich 1996, p. 670). Artificial depressions, often associated with degraded vernal pool habitat, are capable of functioning as habitat and can support vernal pool species including Riverside fairy shrimp (Moran 1977, p. 155; Service 1998a, p. 22). Space for the Riverside fairy shrimp's normal growth and behavior requires an underlying soil series (typically clay soil inclusions with a subsurface claypan or hardpan component), which forms an impermeable layer, that sustains appropriate inundation periods (i.e., water only slowly percolates once filled) and provides necessary physiological requirements, including but not limited to, appropriate water temperature and water chemistry (mineral) regimes, a natural prey base, foraging opportunities, and areas for predator avoidance.

Intact vernal pool hydrology (including the seasonal filling and drying down of pools) is the essential feature that governs the life cycle of the Riverside fairy shrimp. An intact hydrological regime includes seasonal hydration (during not all but most years) followed by drying out of the substrate to promote overwintering of cysts, and provide conditions to support a viable cyst bank for the following season. Proper timing of precipitation and the associated hydrological and soil processes in the upland watershed contributes to the provision of space for growth and normal behavior; seasonal filling and persistence of the vernal pool is necessary for cyst hatching and successful reproduction of Riverside fairy shrimp (see Sites for Breeding, Reproduction, and Rearing (or Development) of Offspring, below).

To maintain high-quality vernal pool ecosystems, the vernal pool basin or complex and its upslope vernal pool watershed (adjacent vegetation and upland habitat) must be available and functional (Hanes and Stromberg 1998, p. 38). Adjacent upland habitat supplies important hydrologic inputs to sustain vernal pool ecosystems. Protection of the upland habitat between vernal pools within the watershed is essential for

maintaining space needs for Riverside fairy shrimp (i.e., inundation periods of adequate length to support the entire life-history function and reproductive cycles necessary for Riverside fairy shrimp) and to buffer the vernal pools from edge effects.

Vernal pools generally occur in complexes, which are defined by two or more vernal pools in the context of a larger vernal pool watershed. The local watershed associated with a vernal pool complex includes all surfaces in the surrounding area that flow into the vernal pool complex. Within a vernal pool complex, vernal pools are hydrologically connected to one another within the local geographical context. These vernal pool complexes may connect by either surface, or subsurface, flowing water. Pools and complexes are dependent on adjacent geomorphology and microtopography for maintenance of their unique hydrological conditions (Service 1998a, p. 23). Water may flow over the surface from one vernal pool to another (over-fill or "overbanking"), throughout a network of swales, or low-point depressions within a watershed. Due to an impervious clay layer or hardpan, water can also flow and collect below ground, such that the soil remains saturated with water. The result of the movement of the water through vernal pool systems is that pools fill and hold water continuously for a number of days, to weeks, to months, following the initial rainfall (Hanes *et al.* 1990, p. 51). Some hydrologic systems have watersheds that cover a large area and that contribute to filling and the hydrological dynamics of the system, while other hydrologic systems have very small watersheds and fill almost entirely from direct rainfall. It is also possible that subsurface inflows from surrounding soils within a watershed contribute to filling some vernal pools (Hanes *et al.* 1990, p. 53; Hanes and Stromberg 1998, p. 48).

Impervious subsurface layers of clay soils or hardpan geology, combined with flat to gently sloping topography, serve to inhibit rapid infiltration of rainwater, resulting in ponded water in vernal pools (Bauder and McMillian 1998, pp. 57–59). These soils also act as a buffer to moderate the water chemistry and rate of water loss to evaporation (Zedler 1987, pp. 17–30). In Ventura County, soils series known to support Riverside fairy shrimp include, but are not limited to, the Azule, Calleguas, Cropley, and Linne soil series. In Orange County, soils series include the Alo, Balcom, Bosanko, Calleguas, Cieneba, Myford, and Soper soil series. In western Riverside County, vernal pool habitat known to support Riverside

fairy shrimp includes the Altamont, Auld, Bosanko, Cajalco, Claypit, Murrietta, Porterville, Ramona, Traver, and Willows soil series. In San Diego County, vernal pool habitat known to support Riverside fairy shrimp includes the Diablo, Huerhuero, Linne, Placentia, Olivenhain, Salinas, Stockpen, and Redding soil series. Soil series data are based on 2008 Soil Survey Data and are available online at: <http://websoilsurvey.nrcs.usda.gov>. For additional information on soils, see Primary Constituent Elements (PCEs) for Riverside Fairy Shrimp.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Riverside fairy shrimp are filter feeders and their diet consists mostly of algae, bacteria, and other microorganisms (Parsick 2002, pp. 37–41, 65–70). In a natural vernal pool setting, these food items are readily available. Typically, an undisturbed, intact surface and subsurface soil structure (not permanently altered by anthropogenic land use activities such as deep, repetitive discing, or grading), and the associated hydrogeomorphic processes within the basin and upland watershed, are necessary to provide food, water, minerals, and other physiological needs for Riverside fairy shrimp. Water temperature, water chemistry, and length of time vernal pools are inundated with water are the important factors in the hatching and temporal appearance of Riverside fairy shrimp (Gonzalez *et al.* 1996, pp. 315–316; Hathaway and Simovich 1996, p. 669). Riverside fairy shrimp hatch and reproduce in water at temperatures that range generally from 5 to 20 degrees Celsius (C) (41 to 68 degrees Fahrenheit (F)), and typically do not hatch at temperatures greater than 25 degrees C (77 degrees F) (Hathaway and Simovich 1996, pp. 674–675). Riverside fairy shrimp have a wider thermal tolerance than San Diego fairy shrimp (*Branchinecta sandiegonensis*), which allows Riverside fairy shrimp to hatch later in the season when deeper vernal pools are still filled with water.

Cover or Shelter

Ponding of vernal pool habitat (water) also provides cover and shelter for Riverside fairy shrimp. During the time these habitats are inundated, water plays an important role in providing the necessary aquatic environment (shelter) for the fairy shrimp to complete their life-history requirements. Without protection from desiccation provided by water, fairy shrimp would be unable to hatch, grow, mature, reproduce, and

disperse within the vernal pool habitat (Helm 1998, p. 136; Service 1998a, p. 34; Eriksen and Belk 1999, pp. 71, 105). Additionally, the wet period (ponding) excludes species that are exclusively terrestrial, providing a level of shelter from predation and competition for the fairy shrimp that are adapted to short-lived, ephemeral wetland habitats.

The undisturbed soil bank also provides cover and shelter for fairy shrimp cysts during the dry-down period of the vernal pool habitat. The drying phase allows reproductive cysts to overwinter, as the cysts lay dormant in the soil; basin soils provide cover and shelter to Riverside fairy shrimp as the vernal pool dries out (Simovich and Hathaway 1997, p. 42; Eriksen and Belk 1999, p. 105). By maintaining the population in a dormant state, reproductive cysts, and the undisturbed soil in which they rest, protect Riverside fairy shrimp from predators and competitors during the dry period in vernal pools. Cyst dormancy is an important life-history adaptation to surviving arid phases, and is important for synchronizing life cycles in unstable and ephemeral wetland habitats (Belk and Cole 1975, pp. 209–210). Like the wet period exclusion of terrestrial plants, the dry-down period also excludes species that are exclusively aquatic (such as fish), providing shelter for specially adapted Riverside fairy shrimp.

Sites for Breeding, Reproduction, and Rearing (or Development) of Offspring

Mature shrimp are typically observed from mid-March to April (Eng *et al.* 1990, p. 259). In years with early or late rainfall, the hatching period may be extended. Riverside fairy shrimp can reach sexual maturity and begin mating approximately 8 weeks from the time a vernal pool fills with water (Hathaway and Simovich 1996, p. 673). Length of time to maturity presumably restricts Riverside fairy shrimp from occupying shallow pools that often last only several days to a few weeks (Hathaway and Simovich, p. 674).

Because vernal pool ecosystems are highly variable in the length of time pools remain filled, Riverside fairy shrimp have become adapted to some degree of unpredictability in their habitat (Eriksen and Belk 1999, pp. 104–105) and to a system where the conditions needed for success occur transitorily. Depending on rainfall and environmental conditions, a vernal pool may fill and recede numerous times. Often the pool may evaporate before Riverside fairy shrimp are able to mature and reproduce (Ripley *et al.* 2004, pp. 221–223). Therefore, when the

females' eggs are fertilized, they begin to develop; the development of the fertilized eggs stops at an early stage (after a few cell divisions) and the eggs enter diapause (become dormant). Diapausing eggs are often referred to as "cysts" or "resting eggs." Riverside fairy shrimp cysts are small (finer than a tip of a pencil) and contain a dormant fairy shrimp embryo encased in a hard outer shell. These cysts are generally retained in a brood pouch on the underbelly of the female until she dies, when both drop to the bottom of the vernal pool to become part of a cyst bank in the soil layer of the vernal pool. During subsequent filling events, eggs may emerge from dormancy and hatch, or continue to diapause. Signals that break diapause include temperature and oxygen concentrations (Belk and Cole 1975, p. 216, see Thorp and Covich, p. 767). Resting eggs of freshwater crustaceans have been shown to survive drying, heat, freezing, and ingestion by birds (Fryer 1996, pp. 1–14). Resting stages (dormancy) appear to be an adaptation to temporary habitats and may aid in long-distance dispersal (Belk and Cole 1975, pp. 209, 222; Williams 1985, p. 97).

Researchers have found that only a small portion of the cysts in the cyst bank hatch each time the vernal pool fills. As only small percentages of Riverside fairy shrimp cysts hatch in any given year, if the pool dries before the species is able to mature and reproduce, there are still many more cysts left in the soil that may hatch the next time the pool fills (Simovich and Hathaway 1997, p. 42). Simovich and Hathaway (1997, pp. 40–43) referred to this as "bet-hedging" and concluded that it allows fairy shrimp, including Riverside fairy shrimp, to survive in an unpredictable environment. The "bet-hedging" ensures that some cysts will be available for hatching when the vernal pools hold water for a period long enough for Riverside fairy shrimp to complete their entire life cycle. Thus, reproductive output is spread over several seasons for small aquatic crustaceans living in variable environments. Allowing conditions within the above physical parameters to occur on a naturally cyclic basis is essential for the survival and conservation of the Riverside fairy shrimp.

As previously discussed in the Background section above, Riverside fairy shrimp are restricted to a small subset of long-lasting vernal pools and ephemeral wetlands in southern California because this species has a relatively longer maturation rate than other fairy shrimp, taking approximately

8 weeks to reach sexual maturity and begin mating (Hathaway and Simovich 1996, p. 673). This distinctly longer maturation rate presumably restricts Riverside fairy shrimp typically to pools that are moderate to deep vernal pools and ephemeral basins (generally ranging from 10 in (25.4 cm) to 5 to 10 feet (1.5 to 3 meters) in depth) (Hathaway and Simovich 1996, p. 675).

Habitats That Are Protected From Disturbance or Are Representative of the Historical, Geographical, and Ecological Distributions of the Species

The majority of complexes and pools that currently support Riverside fairy shrimp have experienced some level of disturbance, some more recently or to a greater extent than others. Pools that support Riverside fairy shrimp are generally found in flat or moderately sloping areas, primarily in annual, disturbed (such as grazed or deep disced) grassland and chaparral habitats. These areas are more vulnerable to agriculture, cattle, and off-road vehicle activity.

Estimates of the historical distribution of Riverside fairy shrimp suggest that 90 to 97 percent of vernal pool habitat has been lost in southern California (Mattoni and Longcore 1997, pp. 71–73, 86–88; Bauder and McMillan 1998, p. 66; Keeler-Wolf *et al.* 1998, p. 10; Service 1998a, p. 45). Consideration should be given to conserve much of the remaining Riverside fairy shrimp occurrences from further loss and degradation in a configuration that maintains habitat function and species viability (Service 1998a, p. 62). Historically, there were larger complexes of vernal pools including areas on the Los Angeles coastal prairie (Mattoni and Longcore 1997, p. 88). In other places, such as Riverside County, there is a possibility of documenting additional occurrences given more intensive survey efforts and reporting. Because Riverside County has not yet been developed and fragmented to the same extent as Los Angeles County, we believe undocumented occurrences of the Riverside fairy shrimp may occur in Riverside County.

The conservation of Riverside fairy shrimp is dependent on several factors including, but not limited to, maintenance of areas (of sufficient size and configuration to sustain natural ecosystem components, functions, and processes) that provide appropriate inundation and ponding durations, natural hydrologic regimes and appropriate soils, intermixed wetland and upland watershed, connectivity among pools within geographic proximity to facilitate gene flow among

complexes, and protection of existing vernal pool composition and structure.

In a few locations, two species of fairy shrimp, San Diego fairy shrimp and Riverside fairy shrimp, are known to co-occur (Hathaway and Simovich 1996, p. 670). However when these species do co-occur, they rarely have been observed to coexist as adults (Hathaway and Simovich 1996, p. 670); given Riverside fairy shrimp's slower rate of development, San Diego fairy shrimp are usually found earlier in the season than Riverside fairy shrimp (Hathaway and Simovich 1996, p. 675). Maturation rates are responsible for the sequential appearance of the species as adults in pools where they co-occur (Hathaway and Simovich 1996, p. 675). Neither species is found in the nearby desert or mountain areas, as temperature has been shown to play an important role in the spatial and temporal appearance of fairy shrimp.

Primary Constituent Elements (PCEs) for Riverside Fairy Shrimp

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of Riverside fairy shrimp in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements to be the elements of physical and biological features that are essential to the conservation of the species.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the primary constituent elements specific to Riverside fairy shrimp are:

(1) Ephemeral wetland habitat consisting of vernal pools and ephemeral habitat that have wet and dry periods appropriate for the incubation, maturation, and reproduction of Riverside fairy shrimp in all but the driest of years, such that the pools:

- (a) Are inundated (pond) approximately 2 to 8 months during winter and spring, typically filled by rain, surface and subsurface flow;
- (b) generally dry down in the late spring to summer months;
- (c) may not pond every year; and
- (d) provide the suitable water chemistry characteristics to support Riverside fairy shrimp.

These characteristics include physiochemical factors such as alkalinity, pH, temperature, dissolved solutes, dissolved oxygen, which can vary depending on the amount of recent precipitation, evaporation, or oxygen saturation; time of day; season; and type

and depth of soil and subsurface layers. Vernal pool habitat typically exhibits a range of conditions but remains within the physiological tolerance of the species. The general ranges of conditions include but are not limited to:

(i) Dilute, freshwater pools with low levels of total dissolved solids (low ion levels (sodium ion concentrations generally below 70 mmol/l);

(ii) low alkalinity levels (lower than 80 to 1,000 milligrams per liter (mg/l)); and

(iii) a range of pH levels from neutral to alkaline (typically in range of 6.4–7.1).

(2) Intermixed wetland and upland habitats that function as the local watershed, including topographic features characterized by mounds, swales, and low-lying depressions within a matrix of upland habitat that result in intermittently flowing surface and subsurface water in swales, drainages, and pools described in PCE 1. Associated watersheds provide water to fill the vernal or ephemeral pools in the winter and spring months. Associated watersheds vary in size and therefore cannot be generalized, and they are affected by factors including surface and underground hydrology, the topography of the area surrounding the pool or pools, the vegetative coverage, and the soil substrates in the area. Size of associated watershed likely varies from a few acres to greater than 100 ac (40 ha).

(3) Soils that support ponding during winter and spring which are found in areas characterized in PCEs 1 and 2 that have a clay component or other property that creates an impermeable surface or subsurface layer. Soil series with a clay component or an impermeable surface or subsurface layer typically slow percolation, increase water run-off (at least initially), and contribute to the filling and persistence of ponding of ephemeral wetland habitat where Riverside fairy shrimp occur. Soils and soil series known to support vernal pool habitat include, but are not limited to:

- (a) The Azule, Calleguas, Cropley, and Linne soils series in Ventura County;
- (b) the Alo, Balcom, Bosanko, Calleguas, Cienega, and Myford soils series in Orange County;
- (c) the Cajalco, Claypit, Murrieta, Porterville, Ramona, Traver, and Willows soils series in Riverside County; and
- (d) the Diablo, Huerhuero, Linne, Placentia, Olivenhain, Redding, Salinas, and Stockpen soils series in San Diego County.

This proposed rule identifies the PCEs necessary to support one or more of the

life-history functions of Riverside fairy shrimp and those areas containing the PCEs. We believe conservation of the Riverside fairy shrimp is dependent upon a multitude of factors.

Conservation and management of areas across the species' range that maintain normal hydrologic and ecological functions where existing populations survive and reproduce and that are representative of the geographic distribution of the species, conservation of areas representative of the ecological distribution of Riverside fairy shrimp (various combinations of soil types, vernal pool chemistry, geomorphic surfaces and vegetation community associations), and conservation of areas that allow for the movement of cysts between areas representative of the geographic and ecological distribution of the species (within and between vernal pool complexes) are the considered criteria needed for the conservation of Riverside fairy shrimp.

We are proposing to designate most of the known occupied habitat of Riverside fairy shrimp because: (1) Riverside fairy shrimp are non-migratory; (2) disjunct populations likely represent unique, locally adapted populations (adapted to unique, site-specific or habitat-specific environmental conditions); and (3) gene exchange between populations or critical habitat units is likely infrequent. Where management units are sufficiently distant (16 to 159 mi (26 to 256 km)) from one another, the likelihood of gene exchange is reduced. All of the areas proposed contain one or more of the PCEs essential for the species that may require special management considerations or protection. We have also determined that all of the areas we are proposing (including Johnson Ranch Created Pools (Subunit 3h) that was occupied after the time of listing) are essential to the conservation of the species because these areas: (1) Maintain the genetic variability of Riverside fairy shrimp across its known geographic range and allow for a varying nature and expression of the species, (2) allow for gene flow and dispersal, and habitat availability that accommodate natural processes of local extirpation and colonization over time (and thereby reduce the risk of extinction through random and natural events), and (3) maintain a full range of varying habitat types and characteristics for a species by encompassing a full extent of the physical, biological and environmental conditions essential for the conservation of Riverside fairy shrimp.

Not all life-history functions require all of the PCEs. Therefore, not all areas designated as revised critical habitat

will contain all of the PCEs. All units and subunits proposed to be designated as critical habitat are currently occupied (with the exception of Subunit 1b, which is considered to be occupied by Riverside fairy shrimp) and contain one or more primary constituent elements that support the life-history needs of the species. In the case of this proposed designation, most of the units contain all of the PCEs.

Special Management Considerations or Protection

When designating critical habitat, we first assess whether there are specific areas within the geographical area occupied by the species at the time of listing that contain features which are essential to the conservation of the species and which may require special management considerations or protection, before considering whether any areas unoccupied at time of listing may be essential to conserve the species. Although the determination that special management may be required is not a prerequisite to designating critical habitat in areas essential for the conservation of the species that are outside the geographical area occupied at the time of listing, all areas (units/subunits) we are proposing as revised critical habitat in this proposed rule, whether occupied or unoccupied at time of listing, require special management considerations or protection of the essential features to address current and future threats to Riverside fairy shrimp, to maintain or enhance the physical and biological features essential to its conservation, and to ensure the recovery and survival of the species. The areas proposed as revised critical habitat represent our best assessment of the habitat that meets the definition of critical habitat for Riverside fairy shrimp at this time.

A detailed discussion of the threats impacting the physical and biological features essential to the conservation of Riverside fairy shrimp which may require special management considerations or protection can be found in the 1991 proposed listing rule (56 FR 57503; November 12, 1991), the 1993 final listing rule (58 FR 41384; August 3, 1993), the 2001 critical habitat designation (66 FR 29384; May 30, 2001), the 2005 critical habitat designation (70 FR 19154; April 12, 2005), the 2008 5-year review for Riverside fairy shrimp (Service 2008, pp. 12–37), and the 1998 Recovery Plan (Service 1998a, pp. 1–100).

The physical and biological features in areas proposed as revised critical habitat in this proposed critical habitat designation all face ongoing threats that

require special management considerations or protection. Threats which may require special management considerations or protection include: vernal pool elimination due to agricultural and urban development, including activities associated with construction of infrastructure (highways, utilities, water storage, etc.) (PCEs 1, 2, 3); the construction of physical barriers or impervious surfaces around a vernal pool complex (PCEs 1, 2); altered water quality/quantity (PCEs 1, 2, 3) due to channeling water runoff into a vernal pool complex or introduction of water, other liquids, or chemicals (including herbicides and pesticides) into the vernal pool basin; physical disturbance to the claypan and hardpan soils within the vernal pool basin (PCEs 1, 3), including the discharge of dredged or fill material into vernal pools and erosion of sediments from fill material; the disturbance of soil profile by grading, digging, or other earthmoving work within the basin or its upland slopes and/or other activities such as off-road vehicle use, heavy foot traffic, grazing, vegetation removal, fire management, or road construction within the watershed for the vernal pools; the invasion of nonnative plant and animal species into the vernal pool basin (PCEs 1, 2), which alter hydrology and soil regimes within the vernal pool; and any activity which permanently alters the function of the underlying claypan or hardpan soil layer (PCE 3) resulting in the disturbance or destruction of the vernal pool flora or the associated upland watershed (PCEs 2, 3). All of these threats have the potential to permanently reduce or increase: the depth of a vernal pool, the ponding duration and inundation of the vernal pool, or other vernal pool features beyond the tolerances of Riverside fairy shrimp (PCE 1).

Loss and degradation of wetland habitat, most directly from conversion to agriculture and development, was cited in the final listing rule as a cause for the decline of Riverside fairy shrimp (58 FR 41387; August 3, 1993). Most of the populations of this species are located in San Diego, Orange, and Riverside Counties. These counties have had (and continue to have) increasing human populations and attendant housing, development, and infrastructure needs. Natural areas in these counties are frequently near or bounded by urbanized areas. Grading, discing, and scraping in areas for urbanization results in loss of vernal pool topography and soil surface as well as the subsurface soil layers to the degree that they will no longer support

ponding for Riverside fairy shrimp (PCE 3). Urban development modifies and removes vernal pool topography, compacts or disturbs soils such that basins and upland watershed components are altered, and likely eliminates or fragments populations of Riverside fairy shrimp through direct crushing of cysts, through disruption of soils and removal of the cyst bank, and through the modification of upland hydrology and topography, which may potentially isolate a pool or pools within a pool complex. Overall, habitat loss continues to be the greatest direct threat to Riverside fairy shrimp.

Because the flora and fauna in vernal pools or swales can change if the hydrologic regime is altered (Bauder 1986b), human activities that reduce the extent of the watershed or which alter runoff patterns (i.e., timing, amount, or flow of water) (PCE 2) may also eliminate Riverside fairy shrimp, reduce their population sizes or reproductive success, or alter the duration or filling of basins such that the location of sites inhabited by this species may shift. Changes to hydrologic patterns due to cattle trampling, off-road vehicle use, human trampling, road development, military activities, and water management activities, impact vernal pools (PCEs 1, 2, 3) (58 FR 41387; August 3, 1993). Due to the species highly fragmented and restricted range, exacerbation of impacts from habitat fragmentation (species isolation) on the species' genetic diversity, patterns of gene flow, and persistence; reductions in air and water quality due to human urbanization; or changes in nutrient availability associated with altered hydrology (Bauder 1986b, pp. 209–211) may further impact vernal pool habitats. Unpredictable natural events, such as drought or fire can be especially devastating due to the fragmented and restricted range of the species (58 FR 41390, August 3, 1993). These threats may require special management considerations or protection.

Changes in hydrology that affect the Riverside fairy shrimp's primary constituent elements are caused by activities that alter the surrounding topography or change historical water flow patterns in the watershed (PCEs 2, 3). Even slight alterations of the hydrology can change the depth, volume, and duration of ponding inundation; water temperature; soil; mineral and organic matter transport to the pool; and water quality and chemistry, which in turn can make the ephemeral wetland habitat (basin) (PCE 1) unsuitable for Riverside fairy shrimp. Activities that impact the hydrology include, but are not limited to, road

building, grading and earth moving, impounding natural water flows, and draining of the pool(s) or of their immediately surrounding upland watershed. Impacts to the hydrology of vernal pools can be managed through avoidance of such activities in and around the pools and the associated surrounding upland areas.

Disturbance to the impermeable substrate layer of claypan and hardpan soils within vernal pools occupied by the Riverside fairy shrimp (PCE 3) may alter the depth, ponding inundation, water temperature, and water chemistry. Physical disturbances to claypan and hardpan soils may be caused by excavation of borrow material, off-road vehicles, military training activities, repeated or deep agricultural discing, drilling, or creation of berms that obstruct the natural hydrological surface or sub-surface flow of water run-off and precipitation. Impacts to the soils of vernal pools can be managed through avoidance of these activities in and around the pools and the associated surrounding upland areas.

Invasive plant species may alter the ponding inundation and water temperature by changing the evaporation rate and shading of standing water in vernal pools (PCEs 1, 2, 3). Invasive plant species, such as brass-buttons (*Cotula coronopifolia*) and Pacific bentgrass (*Agrostis avenaceae*), compete with native vernal plant species and may alter the physiochemical factors of the water (PCE 1), the ponding duration (PCE 1), and the upland habitat (PCE 2), and may modify the soils (PCE 3) in these vernal pools. Impacts due to invasive plants can be managed such that activities needed to remove and manage native vernal pool plants, are conducted to maintain the appropriate hydrology and physiochemical nature of the vernal pools required by the life-history processes of Riverside fairy shrimp.

Further discussion of specific threats facing individual proposed revised critical habitat units is provided in the unit descriptions below. In these proposed revised critical habitat units, special management considerations or protection may be needed to ensure the long-term existence and management of ephemeral and upland habitat sufficient for the shrimp's successful reproduction and growth, adequate feeding habitat, and proper physiochemical and environmental regimes, linked hydrology, and connectivity within the landscape.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(1)(A) of the Act, we use the best scientific and commercial data available in determining areas within the geographical area occupied at the time of listing that contain the features essential to the conservation of the Riverside fairy shrimp, and areas outside of the geographical area occupied at the time of listing that are essential for the conservation of the Riverside fairy shrimp. We reviewed available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), we considered whether designating additional areas outside those areas occupied at the time of listing are essential to ensure the conservation of the species. We are proposing designation of critical habitat in areas within the geographical area occupied by the species at the time of listing in 1993 with features essential to conservation of the species that may require special management considerations and protection. We are also proposing designation of the the Johnson Ranch Created Pools area. Although this area was not occupied at the time of listing, we believe the area is also essential for the conservation of the the Riverside fairy shrimp, considering the very restricted distribution of the species. We believe the long-term conservation of Riverside fairy shrimp depends upon the ongoing protection and management of these remaining, occupied vernal pools within the known range of the species.

During preparation of the 1998 Recovery Plan for Vernal Pools in Southern California (see further explanation below), we evaluated the data on known Riverside fairy shrimp occurrences and determined, based on the features associated with vernal pools and vernal pool complexes, those necessary for the stabilization and reclassification of the species (Service 1998a, Appendices F, G). We since have reevaluated those areas based on species occupancy, and their hydrology, watershed, and topographic features, and their current management needs. Lands are proposed for designation (with the exception of Subunit 3g) based on sufficient PCEs being present to support the species' life-history processes.

In determining which areas of habitat occupied at time of listing currently contain the physical and biological features essential to the conservation of Riverside fairy shrimp, we used all

available scientific and commercial data including information from the 1991 proposed listing rule (56 FR 57503; November 12, 1991); the 1993 final listing rule (58 FR 41384; August 3, 1993); the 2004 proposed critical habitat designation for Riverside fairy shrimp (69 FR 23024; April 27, 2004); the 2005 final critical habitat designation (70 FR 19154; April 12, 2005); the 1998 Recovery Plan (Service 1998a, pp. 1–113); the 2008 5-year review for Riverside fairy shrimp (Service 2008, pp. 1–57); the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) records; published peer-reviewed articles; unpublished papers and reports; academic theses; survey results; Geographic Information System (GIS) data (such as species occurrences, soil data, land use, topography, and ownership maps); and correspondence to the Service from recognized experts. We solicited new information collected since publication of the 1998 Recovery Plan and 2005 final critical habitat designation, including information from State, Federal, and tribal governments; scientific data on Riverside fairy shrimp collected by academia and private organizations; information in reports submitted during consultations under section 7 of the Act; information contained in analyses for individual and regional HCPs where Riverside fairy shrimp is a covered species; and data collected from reports submitted by researchers holding recovery permits under section 10(a)(1)(A) of the Act.

At the time Riverside fairy shrimp was listed in 1993, the geographical area occupied by the species was considered to include Orange, Riverside, and San Diego Counties, as well as Baja, Mexico (58 FR 41384; August 3, 1993). We now have additional records of occurrence for Riverside fairy shrimp extending the

species' distribution; we believe these additional areas were occupied at the time of listing but were not identified at the time of listing or in the Recovery Plan.

Although not explicitly detailed, the Recovery Plan identifies areas essential to the recovery of the species as those that are determined necessary to advance at least one of the following conservation criteria: (1) Maintain habitat function and spatial configuration for species viability in the long term; (2) support stable, intact occurrences; (3) represent unique habitat or habitat associations within the species' range; and (4) capture the ecological, biological, edaphic (soils), micro-topography, genetic, and geographical variation within vernal pools and vernal pool complexes throughout the species' range.

Our determination of habitat essential to the conservation of Riverside fairy shrimp takes into consideration this generalized conservation approach and areas identified in the 1998 Recovery Plan as necessary for the species stabilization and reclassification. The 1998 Recovery Plan identifies "management areas" on which the long-term conservation and recovery of Riverside fairy shrimp depends. Appendices F and G in the 1998 Recovery Plan defined known vernal pool complexes essential to the conservation of several vernal pool species, including Riverside fairy shrimp (Service 1998a, pp. F1–G3). Eight distinct management areas were identified based on plant and animal distribution, soil types, and climatic variables (Service 1998a, pp. 38–39). Management areas include vernal pools and complexes known to be occupied and essential to the conservation of Riverside fairy shrimp.

The 1998 Recovery Plan uses management areas to define regional conservation objectives. We have used these same management areas and names to assist us in identifying specific areas essential to the conservation of the Riverside fairy shrimp where possible. In cases when new occurrence data identifies occupied vernal pools not identified in the Recovery Plan, we have relied on the best available scientific data to update map coverages (for example, in Orange and Riverside Counties). We believe these new occurrences were in fact occupied at the time of listing, but only have been documented since the publication of the recovery plan. Our 2005 final rule to designate critical habitat used locations identified in Appendices F and G of the 1998 Recovery Plan; however, for this proposed revised critical habitat (due to improvements to the PCEs and mapping methodologies), some additions and subtractions have occurred in areas previously identified as essential either in the 1998 Recovery Plan or in the 2005 final critical habitat designation (Table 1). In some cases, areas within subunits have been reduced because they simply do not contain the PCEs essential to the conservation of the Riverside fairy shrimp. In other cases, we have new distribution information which has led us to remove areas previously determined as essential because the physical and biological features do not support the necessary PCEs, such that we no longer believe that they meet the definition of essential to the conservation of the species (i.e., are areas which have been significantly altered or impacted since the 2005 designation). Specific differences from the 2005 final rule are summarized in the Summary of Changes from Previously Designated Critical Habitat section of this rule.

TABLE 1—AREAS IDENTIFIED AS NECESSARY FOR STABILIZING RIVERSIDE FAIRY SHRIMP POPULATIONS AS LISTED IN APPENDIX F OF 1998 RECOVERY PLAN, AS IDENTIFIED AS ESSENTIAL IN THE 2005 FINAL CRITICAL HABITAT DESIGNATION, AND AS IDENTIFIED AS ESSENTIAL IN THIS 2011 PROPOSED REVISED CRITICAL HABITAT DESIGNATION

Name/location	Listed in Appendix F of 1998 Recovery Plan	2005 Final critical habitat (fCH) designation (subunit)	2011 Proposed revised critical habitat (prCH) (subunit)
Unit 1: Ventura County (Goleta and Transverse MA)			
Tierra Rejada Preserve (*RP: Carlsberg (Ranch))	Yes	1a	1a.
South of Tierra Rejada Valley (east of Hwy 23)	No	1b	1b.
Cruzan Mesa (*RP: Cruzan Mesa)	Yes	1c; Removed	Not proposed.
Unit 2: Los Angeles Basin-Orange County Foothills (Los Angeles Basin—Orange MA)			
(MCAS) El Toro (*RP: El Toro)	Yes	2c; 4(b)(2) exclusion	2c.

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Name/location	Listed in Appendix F of 1998 Recovery Plan	2005 Final critical habitat (fCH) designation (subunit)	2011 Proposed revised critical habitat (prCH) (subunit)
SCE Viejo Conservation Bank	No	No subunit #; 4(b)(2) exclusion	2i.
Saddleback Meadow (*RP: Saddleback Meadow)	Yes #	2d; 4(b)(2) exclusion	2dA.
O'Neill Regional Park—near Trabuco Canyon	Yes #	2d; 4(b)(2) exclusion	2dB.
O'Neill Regional Park—near Cañada Gobernadora/east of Tijeras Creek ..	Yes #	2	2e.
Chiquita Ridge (*RP: Chiquita Ridge)	Yes	2f; 4(b)(2) exclusion	2f.
"RP: Orange County Foothills (undescribed)"	Yes # .....	.....	Proposed as subunits herein (2dB, 2e, 2g, 2h, 2i).
Radio Tower Road	No	2g; 4(b)(2) exclusion	2g.
San Onofre State Beach, State Park-leased land (near Christianitos Creek foothills).	No	2h; 4(a)(3) exemption	2h.
Unit 3: Riverside Inland Valleys (Riverside MA)			
March Air Reserve Base	No	3a; Removed	Not proposed.
March Air Reserve Base	No	3b; 4(a)(3) exemption	Not proposed.
Australia Pool	No	No subunit #; 4(b)(2) exclusion	3c.
Scott Road Pool	No	No subunit #; 4(b)(2) exclusion	3d.
Schleuniger Pool	No	No subunit #; 4(b)(2) exclusion	3e.
Skunk Hollow and Field Pool (aka Barry Jones Wetland Mitigation Bank) (*RP: Skunk Hollow/Murrieta).	Yes	No subunit #; 4(b)(2) exclusion	3f.
Johnson Ranch Created Pool	No	No subunit #; 4(b)(2) exclusion	3g.
Santa Rosa Plateau—Mesa de Colorado (*RP: Santa Rosa Plateau)	Yes	Not proposed	3h.
No Unit #: Northern San Diego County Military Land, Exempted (San Diego North Coastal Mesa MA)			
Stuart Mesa, Marine Corps Base (MCB) Camp Pendleton (*RP: Stuart Mesa).	Yes	No subunit #; 4(a)(3)(B) exemption ..	4(a)(3)(B) exemption.
Cocklebur, MCB Camp Pendleton (*RP: Cocklebur)	Yes	No subunit #; 4(a)(3)(B) exemption ..	4(a)(3)(B) exemption.
Las Pulgas, MCB Camp Pendleton (*RP: Las Pulgas)	Yes	No subunit #; 4(a)(3)(B) exemption ..	4(a)(3)(B) exemption.
Land south of San Onofre State Park	Yes	No subunit #; 4(b)(2) exclusion for Mission Critical.	4(a)(3)(B) exemption.
San Mateo, MCB Camp Pendleton (*RP: San Mateo)	Yes	No subunit #; 4(a)(3)(B) exemption ..	Not proposed.
Wire Mountain, MCB Camp Pendleton (*RP: Wire Mountain)	Yes	4(a)(3)(B) exemption	Not proposed.
Portion of San Onofre State Beach, State Park-leased land near Christianitos Creek foothills) (*RP: State Park Lease Area).	No	No subunit #; 4(b)(2) exclusion for National Security.	4(a)(3)(B) exemption.
No Unit #: Central Sand Diego County, Military Land, Exempted—(San Diego Central Coastal Mesa MA)			
AA 1–7, 9–13 East Miramar (Pool 10) (AA1 East)	Yes	4(a)(3)(B) exemption	4(a)(3)(B) exemption.
Unit 4: San Diego North Coastal Mesas (San Diego: North Coastal MA)			
Poinsettia Lane Commuter Train Station (JJ 2) (*RP: JJ 2 Poinsettia Lane).	Yes	4c	4.
Unit 5: San Diego Southern Coastal Mesas (San Diego: South Coastal MA)			
J 33 (Sweetwater High School)	No	5a; 4(b)(2) exclusion	5a.
J 15 Arnie's Point (*RP: J2, J5, J7, J11–21, J23–30)	Yes#	5b; 4(b)(2) exclusion	5b.
East Otay Mesa (*RP: Otay Mesa undescribed)	Yes	5c; partial 4(b)(2) exclusion	5c.
"Otay Mesa vernal pool complexes" (*RP: J2, J5, J7, J11–21, J23–30)	Yes#	No subunit #; 4(b)(2) exclusion	Proposed as subunits below.
J29–31 (*RP: J2, J5, J7, J11–21, J23–30)	Yes#	No subunit #; 4(b)(2) exclusion	5d.

TABLE 1—AREAS IDENTIFIED AS NECESSARY FOR STABILIZING RIVERSIDE FAIRY SHRIMP POPULATIONS AS LISTED IN APPENDIX F OF 1998 RECOVERY PLAN, AS IDENTIFIED AS ESSENTIAL IN THE 2005 FINAL CRITICAL HABITAT DESIGNATION, AND AS IDENTIFIED AS ESSENTIAL IN THIS 2011 PROPOSED REVISED CRITICAL HABITAT DESIGNATION—Continued

Name/location	Listed in Appendix F of 1998 Recovery Plan	2005 Final critical habitat (fCH) designation (subunit)	2011 Proposed revised critical habitat (prCH) (subunit)
J2 N, J4, J5 (Robinhood Ridge—J2) (*RP: J2, J5, J7, J11–21, J23–30)	Yes	No subunit #; 4(b)(2) exclusion	5e.
J2 S and J2 W (aka Hidden Valley, Cal Terraces, Otay Mesa Road) (*RP: J2, J5, J7, J11–21, J23–30).	Yes	No subunit #; 4(b)(2) exclusion	5f.
J14	No	No subunit #; 4(b)(2) exclusion	5g.
J11–12, J16–19 (Goat Mesa) (*RP: J2, J5, J7, J11–21, J23–30)	Yes	No subunit #; 4(b)(2) exclusion	5h.

MA: Management Area as defined in 1998 Recovery Plan.

(*RP): Indicates the name of pool (or pool complex) as stated in the 1998 Recovery Plan.

No: not in 1998 Recovery Plan; occurrence not identified until after 1998.

Yes: indicates the location was identified in the 1998 Recovery Plan.

Yes#: indicates the location was considered in the 1998 Recovery Plan, but at that time was grouped (“lumped”) as multiple vernal pool complexes. These locations have now been “unlumped” in this 2011 proposed rule.

We consider all areas proposed as revised critical habitat to have been occupied at the time of listing (with the exception of Johnson Ranch Created Pools—Subunit 3g, which was not occupied at the time of listing). As further discussed in the unit descriptions below, all areas proposed as critical habitat for Riverside fairy shrimp are currently occupied by the species (Subunit 1b is considered occupied—see unit description below), are within the species’ geographical range, and contain PCEs to support at least one of its life-history functions. If protocol surveys fail to confirm occupancy of Subunit 1b, we are also proposing to designate this area under Section 3(5)(A)(ii) of the Act because we have determined the area is essential for the conservation of the Riverside fairy shrimp (see Subunit 1b unit description below).

As noted above, we also are proposing designation of an area not occupied by the species at the time of listing but which is currently occupied (3g; Johnson Ranch Created Pools), because we have determined the area is essential for the conservation of the species (see unit description below).

We are proposing critical habitat in specific areas that include ephemeral wetland habitat and intermixed wetland and upland habitats of various sizes that possess appropriate soils and topography that support ponding during winter and spring; are within the known geographical and elevation range of Riverside fairy shrimp; are geographically distributed; represent unique ecological or biological features and associations; and will help protect against stochastic extirpation, allow for local adaptation, and provide

connectivity to facilitate dispersal and genetic exchange. By protecting a variety of habitats throughout the species’ historical range, we increase the probability that the species can adjust in the future to various limiting factors that may affect the population, such as changes in abundance and timing of precipitation.

As required by section 4(b)(1)(A) of the Act, we used the best scientific data available in determining areas that contain the features that are essential to the conservation of Riverside fairy shrimp. The steps we followed in identifying critical habitat are described in detail below.

(1) We determined, in accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, the physical and biological habitat features that are essential to the conservation of the species (see *Physical and Biological Features* section above).

(2) We compiled all available observational data on Riverside fairy shrimp into a GIS database. Data on locations of Riverside fairy shrimp occurrences are based on collections and observations made by biologists, biological consultants, and academic researchers. We compiled data from the following sources to create our GIS database for Riverside fairy shrimp: (a) Data used in the 1998 Recovery Plan, in the 2005 final critical habitat rule for Riverside fairy shrimp, and in the 2008 5-year review for Riverside fairy shrimp; (b) the CNDDDB data report for Riverside fairy shrimp and accompanying GIS records (CNDDDB 2010, pp. 1–9); (c) data presented in the City of San Diego’s Vernal Pool Inventory for 2002–2003 (City of San Diego 2004, pp. 1–125); (d) monitoring reports for Riverside fairy

shrimp from MCB Camp Pendleton and MCAS Miramar; (e) the Western Riverside County MSHCP species GIS database; and (f) the Carlsbad Fish and Wildlife Office’s (CFWO) internal species GIS database, which includes the species data used for the County of San Diego MSCP and Western Riverside County MHCP, reports from section 7 consultations, and Service observations of Riverside fairy shrimp (CFWO internal species GIS database).

Compiled data were reviewed to ensure accuracy. Each data point in our database was checked to ensure that it represented an original collection or observation of Riverside fairy shrimp and that it was mapped in the correct location. Data points that did not match the description for the original collection or observation were remapped in the correct location or removed from our database.

(3) We determined which occurrences were extant at the time of listing based on the listing rule as well as information that has become available since listing. We considered several sources in compiling the best available data on Riverside fairy shrimp vernal pool distribution and species occurrence; we have concluded that, with the exception of Johnson Ranch Created Pools (Subunit 3g), all currently occupied vernal pools were also occupied and extant at the time of listing (see Background section, and the specific unit descriptions below). We have drawn this conclusion because Riverside fairy shrimp has limited dispersal capabilities, and because surveys for the species at the time of listing were incomplete. We believe that the documentation of additional occurrences within the range of the

species after the species was listed was due to an increased effort to survey for this species. Therefore, we believe that all of the areas currently extant, excepting Johnson Ranch Created Pools which were created using cysts salvaged from a nearby historic occurrence (at Redhawk development), were occupied prior to the time this species was listed.

(4) We identified which areas contain the PCEs and identified which of those areas may require special management considerations or protection. All areas containing PCEs were mapped and areas not containing PCEs were removed. Units were designated based on sufficient PCEs being present to support Riverside fairy shrimp life-history processes. Some units contain all of the identified PCEs and support multiple life stages (resting cyst, nauplii, adult). Some units contain only some of the PCEs necessary to support adult Riverside fairy shrimp. Areas that we have identified as having one or more PCEs: (a) Contain large, interconnected ephemeral wetlands; have large numbers of individuals observed; or have habitat areas that allow for connections between existing occurrences of Riverside fairy shrimp; (b) represent important occurrences of this species that are on the geographic edge of this species' distribution; (c) contain occurrences that are more isolated from other occurrences by geographic features, but may represent unique adaptations to local features (biogeochemistry, hydrology, microclimate, soil mineralogy, soil fertility, soil formation processes, and evolutionary time scale); or (d) exist within the distribution of this species and provide connections between occupied areas. The conservation of stable and persistent occurrences throughout the species' range helps to maintain connectivity between occurrences that are in proximity to one another and maintain potential gene flow.

(5) We circumscribed boundaries of potential critical habitat, based on information obtained from the above steps. To map areas proposed as revised critical habitat, we used data on known Riverside fairy shrimp locations and those vernal pools and vernal pool complexes that we identified in the 1998 Recovery Plan as essential for the stabilization and reclassification of the species. For areas identified as essential, we mapped the specific areas that contain the physical and biological features needed to support life-history functions for Riverside fairy shrimp (PCEs). We took the following actions: We first mapped the ephemeral wetland habitat in the occupied area using

occurrence data, aerial imagery, and 1:24,000 topographic maps. We then mapped the intermixed wetland and upland habitats that function as the local watersheds and the topography and soils that support the occupied ephemeral wetland habitat. We mapped these areas to identify the gently sloping area associated with ephemeral wetland habitat and any adjacent areas that slope directly into the ephemeral wetland habitat, which contribute to the hydrology of the ephemeral wetland habitat. We delineated the border of the proposed revised critical habitat around the occupied ephemeral wetlands and associated local watershed areas to follow natural breaks in the terrain such as ridgelines, mesa edges, and steep canyon slopes.

(6) Once all areas containing the PCEs were mapped, we removed all areas not containing the physical and biological features essential to the conservation of Riverside fairy shrimp. For example, when determining proposed critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical and biological features for Riverside fairy shrimp. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical and biological features in any adjacent critical habitat.

(7) We also exempted areas within the boundaries of MCB Camp Pendleton and MCAS Miramar for this proposed rule because we determined these areas are exempt under section 4(a)(3)(B)(i) of the Act from critical habitat designation (see Exemptions section below).

We are proposing for designation as revised critical habitat lands that we have determined were occupied at the time of listing and are currently occupied and contain physical and biological features that are essential to the conservation of the species because they support Riverside fairy shrimp life-history processes, and one area that was not occupied at the time of listing (Johnson Ranch Created Pools) that we

have determined is essential for the conservation of Riverside fairy shrimp.

Summary of Changes From Previously Designated Critical Habitat

The areas identified in this proposed rule constitute a proposed revision of the areas we designated as critical habitat for Riverside fairy shrimp on April 12, 2005 (70 FR 19154). In cases where we have new information or information that was not available for the previous designation, we made changes to the critical habitat for Riverside fairy shrimp to ensure that this proposed rule reflects the best scientific data available.

We made a number of changes to this proposed rule compared to the 2005 final critical habitat designation, including the following:

(1) We refined the Primary Constituent Elements (PCEs) to specifically capture those physical and biological features essential to the conservation of Riverside fairy shrimp, and to more accurately describe a range of physiochemical factors (e.g., dissolved solutes, temperature, and other water chemistry attributes) that are necessary for completion of Riverside fairy shrimp's essential life-history processes.

(2) We incorporated information related to the genetics of the species rangewide and new distribution data that have become available to us following the 2005 critical habitat designation.

(3) We renamed unit and subunit numbers, and when appropriate redefined (redrew) boundaries to improve and better delineate those areas containing features essential to the survival and conservation of Riverside fairy shrimp. Boundaries more precisely capture the underlying physical and biological features associated with vernal pools and vernal pool complexes throughout the species' range. In the 2005 rule, we used 330-ft (100-m) Universal Transverse Mercator (UTM) (North American Datum 1927 (NAD 27)) grid cells overlaid on top of those vernal pool complexes and their associated watershed. In this proposed revision, because we have improved our mapping methodology and our selection criteria, areas containing upland habitat not directly contributing to the hydrology of the vernal pools have not been included in this proposal.

(4) We re-evaluated areas considered for exclusion from critical habitat designation under section 4(b)(2) of the Act for which we are seeking public comment (see Public Comments section of this rule).

(5) We added, subtracted, and revised areas that do or do not meet the definition of critical habitat. Certain areas identified as previously meeting the definition of critical habitat were determined—based on a review of the best available scientific and commercial information—to no longer meet the definition of critical habitat. In these cases, we removed areas that no longer meet the definition of critical habitat due to significant alterations in drainage or development within the watershed. The revised criteria resulted in inclusion of areas essential to the conservation of the species and removal of areas (since the 2004 proposed rule or the 2005 final rule) that no longer meet the definition of critical habitat.

In this proposed revised critical habitat, we have identified 33 areas that we believe meet the definition of critical habitat. One of the areas being proposed was unoccupied at the time of listing (Johnson Ranch Created Pools). Each of the 33 areas contains the physical and biological features essential to the conservation of Riverside fairy shrimp. Table 2 shows a comparison of the locations, units, and acreage between the 2005 final critical habitat designation and this proposed revised critical habitat designation. Eight of the 33 areas determined to be essential are in north San Diego County on MCB Camp Pendleton and are exempt from this proposed rule under section 4(a)(3)(B)(i) of the Act: San Onofre State

Beach, State Park-leased lands, near Christianitos Creek foothills (along the northwest corner of MCB Camp Pendleton); area south of San Onofre State Beach, in Uniform Training Area; Las Pulgas North; Las Pulgas East; Las Pulgas West; Cocklebur North; Cocklebur South; and Stuart Mesa; One area is on MCAS Miramar (AA1) and is also exempt from this proposed rule under section 4(a)(3)(B) of the Act. The remaining 25 areas (5 units consisting of 25 subunits) that meet the definition of critical habitat are mapped as proposed revised critical habitat for Riverside fairy shrimp, are presented in Table 2, and are described in the unit descriptions below.

TABLE 2—EVALUATION OF UNITS AND SUBUNITS FOR AREAS CONTAINING ESSENTIAL FEATURES BETWEEN 2005 FINAL CRITICAL HABITAT (FCH) AND 2011 PROPOSED REVISED CRITICAL HABITAT (PRCH CONSIDERED TO MEET THE DEFINITION OF CRITICAL HABITAT)

[Note: If amount in 2005 final critical habitat is bracketed, the unit/subunit and its acreage were proposed in 2004 but removed in 2005.]

Location*	2005 Final critical habitat [or prCH 2004]		2011 Proposed revised critical habitat	
	Subunit	Area containing essential features 2005	Subunit	Area containing essential features 2011
Unit 1: Ventura County Management Area				
Tierra Rejada Preserve	1a	47 ac (19 ha)	1a	18 ac (7 ha).
South of Tierra Rejada Valley.	1b	185 ac (75 ha)	1b	448 ac (182 ha).
Cruzan Mesa	[1c; 534 ac (216 ha)]; Removed.	0 ac (0 ha)	1c; no longer meets definition of essential; no confirmed species occupancy data.	0 ac (0 ha).
Unit 2: Los Angeles Basin-Orange County Foothills Management Area				
LAX	[2a; 49 ac (20 ha)]; Removed.	0 ac (0 ha)	2a; no longer meets definition of essential; PCEs no longer present.	0 ac (0 ha).
LAX	[2b; 54 ac (22 ha)]; Removed.	0 ac (0 ha)	2b; no longer meets definition of essential; PCEs no longer present.	0 ac (0 ha).
(MCAS) El Toro	[2c; Excluded under section 4(b)(2)].	14 ac (6 ha)	2c	26 ac (11 ha).
SCE Viejo Conservation Bank.	Excluded under section 4(b)(2).	84 ac (34 ha)	2i	63 ac (25 ha).
Saddleback Meadows and O'Neill Regional Park—near Trabuco Canyon.	Unit 2 combined; portion excluded under section 4(b)(2).	57 ac (23 ha) Excluded	2dA	256 ac (104 ha).
O'Neill Regional Park—near Cañada Gobernadora/east of Tijeras Creek.	Excluded under section 4(b)(2).	49 ac (20 ha)	2dB	91 ac (37 ha).
Chiquita Ridge	Excluded under section 4(b)(2).	101 ac (41 ha)	2e	70 ac (28 ha).
Radio Tower Road	Excluded under section 4(b)(2).	262 ac (106 ha)	2f	56 ac (23 ha).
San Onofre State Beach, State Park-leased lands.	Excluded under section 4(b)(2).	417 ac (169 ha)	2g	51 ac (21 ha).
		47 ac (19 ha)	2h	107ac (43 ha).
Unit 3: Riverside Inland Valleys Management Area				
March Air Reserve Base ...	[3a; 44 ac (18 ha)]; Removed	0 ac (0 ha)	3a; no longer meets definition of essential; PCEs no longer present.	0 ac (0 ha).

TABLE 2—EVALUATION OF UNITS AND SUBUNITS FOR AREAS CONTAINING ESSENTIAL FEATURES BETWEEN 2005 FINAL CRITICAL HABITAT (FCH) AND 2011 PROPOSED REVISED CRITICAL HABITAT (PRCH CONSIDERED TO MEET THE DEFINITION OF CRITICAL HABITAT—Continued

[Note: If amount in 2005 final critical habitat is bracketed, the unit/subunit and its acreage were proposed in 2004 but removed in 2005.]

Location*	2005 Final critical habitat [or prCH 2004]		2011 Proposed revised critical habitat	
	Subunit	Area containing essential features 2005	Subunit	Area containing essential features 2011
March Air Reserve Base ...	3b; Excluded under section 4(b)(2).	101 ac (41 ha)	3b; no longer meets definition of essential; PCEs no longer present.	0 ac (0 ha).
Australia Pool	Excluded under section 4(b)(2).	529 ac (214 ha)	3c	19 ac (8 ha).
Scott Road Pools	Excluded under section 4(b)(2).	15 ac (6 ha)	3d	9 ac (4 ha).
Schleuniger Pool	Excluded under section 4(b)(2).	136 ac (55 ha)	3e	23 ac (9 ha).
Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank).	Excluded under section 4(b)(2).	230 ac (93 ha)	3f	163 ac (66 ha).
Johnson Ranch Created Pools.	Excluded under section 4(b)(2).	82 ac (33 ha)	3g	54 ac (22 ha).
Santa Rosa Plateau—Mesa de Colorado.	Excluded under section 4(b)(2).	4,394 ac (1,778 ha)	3h	597ac (242 ha).
Unit 4: San Diego North and Central Coastal Mesas Management Area				
MCB Camp Pendleton	4(a)(3) exemption	2,936 ac (1,188 ha)	4(a)(3) exemption	1,929 ac (780 ha).
Poinsettia Lane Commuter Station.	2c; partially excluded under section 4(b)(2).	22 ac (9 ha)	4c	9 ac (4 ha).
Miramar (AA1 East)	4(a)(3) exemption	117 ac (47 ha)	4(a)(3) exemption	59 ac (24 ha).
Unit 5: San Diego: Southern Coastal Mesas Management Area				
Sweetwater (J33)	Proposed 5a; partially excluded under section 4(b)(2).	3 ac (1 ha)	5a	2 ac (1 ha).
Arnie's Point (J15)	Proposed 5a	122 ac (49 ha)	5b	29 ac (12 ha).
Otay Mesa (including J2, J4, J5, J11, J14, J15, J16–18, J33).	Excluded under section 4(b)(2).	2,004 ac (811 ha) ¹	Now includes 5a, 5b, 5e, 5f, 5g, 5h.	
East Otay Mesa (undescribed).	5c; partially excluded under section 4(b)(2).	111 ac (45 ha)	5c	57 ac (23 ha).
J23–J25, formerly part of east Otay Mesa.	Excluded under section 4(b)(2).	301 ac (122 ha)	Not proposed, determined not essential.	0 ac (0 ha).
J19, J21, J27–28	Excluded under section 4(b)(2).	524 ac (212 ha)	Not proposed, determined not essential.	0 ac (0 ha).
J29–J31, J2 N, J4, J5 (includes Robinhood Ridge).	Excluded under section 4(b)(2).	645 ac (261 ha)	5d	370 ac (150 ha).
	Excluded under section 4(b)(2).	portion of 2,004 ac (811 ha) ¹ .	5e	44 ac (18 ha).
J2 S, J2 W (includes Hidden Valley, Cal Terraces, and Otay Mesa Road).	Excluded under section 4(b)(2).	portion of 2,004 ac (811 ha) ¹ .	5f	33 ac (13 ha).
J14	Excluded under section 4(b)(2).	ortion of 2,004 ac (811 ha) ¹ .	5g	136 ac (55 ha).
J11E, J11 W, J12, J16–19	Excluded under section 4(b)(2).	portion of 2,004 ac (811 ha) ¹ .	5h	255 ac (103 ha).
Total Area Essential for the Conservation of Riverside fairy shrimp**.	.....	13,535 ac (5,477 ha)	5 units, 25 subunits	4,974 ac (2,013 ha).

**Note: Column may not add due to rounding.

*Location is based on vernal complex names used in 1998 Recovery Plan; unit names are based on Management Areas as identified in the 1998 Recovery Plan.

**Values in this table may not sum due to rounding.

¹2,004 ac (811 ha) formerly “lumped sum” under Otay Mesa vernal pool complexes—these are now identified as individual subunits: 5a, 5b, 5e, 5f, 5g, 5h.

The following section provides detailed descriptions of the changes made in this proposed rule and points to new information that precipitated each change.

The PCEs in this proposed rule describe the ephemeral wetland habitat where Riverside fairy shrimp occur along with associated hydrological attributes (ponding, water chemistry, dry down) (PCE 1), the upland habitat (watershed and underlying hydrology) characteristics that support the ephemeral wetlands and their function (PCE 2), and the soils and topography (PCE 3) that allow water to pond during winter and spring months. Compared to the 2005 PCE regarding the vernal pools where Riverside fairy shrimp occur (ephemeral wetland habitats), we have added information about the necessary timing and duration of ponding and broadened the range of physiochemical parameters that may occur in order to more clearly characterize the breadth of conditions in which this species occurs (PCE 1). For the 2005 PCE involving the local watershed and filling of the ephemeral wetland habitat (intermixed wetland and upland habitats that act as a local watershed), we now discuss the land features (topography) that contribute to a functional hydrologic regime (i.e., local watershed) (PCE 2). For the 2005 PCE that related to soil types associated with habitat for Riverside fairy shrimp (soils that support ponding during winter and spring), we now state that hardpan or claypan soil series types (including a partial list) create an impermeable surface or subsurface and facilitate the slow percolation and minimal run-off of water necessary for the ephemeral wetland habitat where Riverside fairy shrimp occur (PCE 3).

Similar to the 2005 critical habitat, we used the 1998 Recovery Plan as a guide; however, in this proposed revised critical habitat we conducted additional analyses of all the Riverside fairy shrimp data currently available which are substantially more complete than what was known at the time the 1998 Recovery Plan was approved. The result of our additional analysis is that some areas identified as essential in the 2005 designation were removed, and other areas that were not identified as essential in the 2005 rule, such as areas in existence at the time of listing but not evaluated or included due to lack of surveys for Riverside fairy shrimp, are included in this proposed rule.

In this proposed revised critical habitat designation, we have described the steps used to identify and delineate the areas we are proposing as revised critical habitat in better detail compared

to the 2005 critical habitat designation, to ensure that the public better understands why the areas are being proposed as critical habitat. In improving our explanation and intent, we have discontinued the use of the “core” and “satellite” population areas, as further discussed below.

In the 2004 proposed critical habitat designation (69 FR 23024; April 27, 2004), we discussed the areas that represent “core population areas” and “isolated population areas” for Riverside fairy shrimp. Core population areas are defined in the 2004 proposed rule (69 FR 23027; April 27, 2004) as multiple pools or pool complexes containing Riverside fairy shrimp that are within close proximity (approximately 5 mi (8 km)) of other occupied pools and pool complexes and that contain the necessary PCEs to support one or more life-history functions essential to the conservation of Riverside fairy shrimp. Isolated populations are defined in the 2004 proposed rule (69 FR 23027; April 27, 2004) as single pools or pool complexes that are known to contain Riverside fairy shrimp, are separated from other known locations by greater than 10 mi (16 km), and which contain the necessary PCEs to support one or more life-history functions essential to the conservation of Riverside fairy shrimp.

Four “core” population areas—Orange County Foothills, Western Riverside County, the southern coastal portion of Camp Pendleton in San Diego County, and Otay Mesa in San Diego County—and seven isolated (“satellite”) populations—the City of Moorpark in Ventura County; Cruzan Mesa and Los Angeles International Airport in Los Angeles County; March Air Reserve Base and near the City of Banning in Riverside County; and in the City of Carlsbad and on MCAS Miramar in San Diego County—were identified as essential for Riverside fairy shrimp in the 2004 proposed critical habitat designation (69 FR 23024; April 27, 2004). We have discontinued the use of this “core” and “satellite” terminology for labeling areas essential to the conservation of the species and have focused on the habitat characteristics of essential areas.

Large, interconnected ephemeral wetland areas supporting vernal pools or vernal pool complexes in areas with potential for more species complexity and associations are essential to, and will serve as anchors for, the overall conservation of this species. As discussed in the 1998 Recovery Plan, conserving larger, interconnected wetland areas with representative habitat heterogeneity (consisting of

dissimilar elements or parts) adjacent to lands with compatible uses are generally preferable to smaller, more isolated pools (Service 1998a, p. 61). Conservation of these areas will sustain the largest populations of Riverside fairy shrimp, allowing the species to persist where it will be less constrained by the threats that negatively impact its essential habitat features (PCEs). However, more isolated (i.e., separated from other known locations by greater than 10 mi (16 km)) habitat areas also support stable, intact occurrences of Riverside fairy shrimp and are also essential to the conservation of the species. Preservation of remaining habitat, including the more isolated pools, serves a fundamental role in the survival and recovery of Riverside fairy shrimp because these areas may represent unique habitat and assemblages within this species’ range. A full array of vernal pools and their constituent species, including a range of physical attributes that characterize various occurrences and associations (e.g., pool soils and topography) may be as rare as the individual species associated with them. The more isolated habitat areas occur over a wide range of soils and at various elevations such that, over a range of environmental variables, the preservation of these pools will help maintain the genetic diversity and adaptive potential of Riverside fairy shrimp and may enable them to survive and potentially respond to future environmental changes and threats. In summary, we believe the areas proposed in this revised critical habitat would provide for the conservation of Riverside fairy shrimp by: (1) Maintaining the physical and biological features essential to the conservation of the species in areas where Riverside fairy shrimp are known to occur; (2) maintaining the current distribution of Riverside fairy shrimp, and thus preserving an array of unique habitat and assemblages within this species’ range, preserving genetic variation and adaptive potential of Riverside fairy shrimp throughout its range, and minimizing the potential effects of local extinction; and (3) including an area that was not occupied at the time of listing but that is essential to conserve the species.

In the 2005 final critical habitat designation, both larger, interconnected ephemeral wetland areas and isolated, small basins and pools were identified as essential to the conservation of the species due largely in part to the species’ limited numbers and distribution (Service 2005, p. 19178). Given the historical loss of vernal pool

habitat in southern California (Mattoni and Longcore 1997; Bauder and McMillian 1998; Keeler-Wolf *et al.* 1998), the conservation of the few remaining occurrences of Riverside fairy shrimp was considered essential for its conservation (Service 1998a). Further, given that Riverside fairy shrimp have a narrow geographic distribution and unique and specialized habitat requirements within that range, we concluded in the 2004 proposed critical habitat designation that all known occupied locations of Riverside fairy shrimp were essential to the conservation of the species (Service 2004, p. 23027). In this proposed revised designation, we have concluded that the conservation of the remaining occupied locations of Riverside fairy shrimp within the geographical range known at the time of listing, and the one created pool area outside the known geographical location at the time of listing capture those areas essential to the conservation of the species. We used the following criteria in the selection of areas that contain the essential features for the Riverside fairy shrimp and focused on designating units and subunits in: (1) Areas throughout the current geographic, elevation, and ecological distribution of the species; (2) areas that maintain the current population structure across the species' range; (3) areas that retain or provide for connectivity within occupied sites such that they would allow for water or wind dispersal to adjacent ephemeral wetland habitat; (4) areas that possess large continuous blocks of occupied habitat, representing source populations and/or unique ecological characteristics; and (5) areas that contain sufficient upland habitat around each occupied location to allow for sufficient survival and recruitment to maintain a self-sustaining population over the long term.

By improving our mapping methodology, we more accurately define the critical habitat boundaries and better represent those areas that possess the physical and biological features essential to the conservation of Riverside fairy shrimp. In the 2005 final rule, we used a 100-meter grid resolution to delineate critical habitat, which resulted in more poorly defined and larger critical habitat areas. In this proposed rule, we accurately mapped areas that contain the PCEs by directly approximating the delineation of

essential features rather than using a 100-meter grid. We believe the result is a more precise mapping of the habitat features and the areas which contain features essential to the conservation of the species. In this proposed revised critical habitat, upland areas (located immediately surrounding the vernal pool basins) and ephemeral wetlands (areas that contain one or more of the PCEs for the Riverside fairy shrimp) were mapped based on topographic features such as ridges, mounded micro-topography (mima mounds), and elevation gradients or slopes. Boundaries for these areas were further refined and delineated by mapping those areas that slope toward the pools, from highest point to highest point in the immediate surrounding upland areas, following the map's topographic elevation gradient around the high points (peaks), to the sides and the lowest part of the basin that encompass the complex of vernal pools. Those areas that the topographic maps show sloping steeply away from the pools, or that are developed or altered, such that necessary PCEs (for example, water, soil, and minerals) cannot be transported toward the vernal pools over such areas, are left outside of the refined delineation. This method was used for vernal pools in both basin and mesa-type topographic settings. Although our mapping methodology results in fewer described acres captured, it is a more accurate depiction of critical habitat boundaries that possess the physical and biological features essential to the conservation of the species.

The 2005 final critical habitat designation (70 FR 19154; April 12, 2005) included 4 units, one of which consisted of two subunits (1A and 1B), comprising a total of 306 ac (124 ha). We identified an additional 13,607 ac (5,506 ha) of land containing features essential to the conservation of Riverside fairy shrimp that were exempted from the 2005 critical habitat designation pursuant to section 4(a)(3)(B)(i) of the Act, or excluded under section 4(b)(2) of the Act (70 FR 19180; April 12, 2005). This proposed rule identifies 4,972 ac (2,012 ha) considered to contain the physical and biological features essential to the conservation of Riverside fairy shrimp (including military land exempt under section 4(a)(3) of the Act (see Table 1,

above, and Table 3, below)). The essential habitat identified in this proposed revision is 9,504 ac (3,846 ha) less than we identified as essential, inclusive of what was excluded or exempted, in the 2005 rule. The acreage reduction is primarily due to our attempt to more accurately delineate the areas that contain the physical and biological features essential to the conservation of Riverside fairy shrimp. We acknowledge the possibility that, due to mapping, data, and resource constraints, there may be some undeveloped areas mapped as critical habitat that do not contain the PCEs. We made every effort to exclude all developed areas, and other land unlikely to contain primary constituent elements essential for Riverside fairy shrimp conservation. Any such structures remaining inside the proposed revised critical habitat are not considered part of the units. This also applies to the land on which the structure lies. A brief discussion of each area designated as critical habitat is provided in the unit descriptions below.

We identified several areas that are exempt under section 4(a)(3)(B)(i) of the Act or will be considered for exclusion under section 4(b)(2) of the Act (see Table 3). In this proposed rule, eight areas (seven areas on MCB Camp Pendleton (1,929 ac (781 ha)) and one area on MCAS Miramar (59 ac (24 ha)) are determined exempt under section 4(a)(3)(B)(i) of the Act. These lands are on land owned, managed, or under the control of the Department of Defense and are addressed in an approved integrated natural resources management plan (INRMP) (in the case of San Onofre State Beach, State Park-leased lands under the Real Estate Agreements and Leases section of the INRMP; see Exclusions section below). Military lands exempt from proposed designation under section 4(a)(3)(B) of the Act are not assigned subunit identifiers; however, MCB Camp Pendleton falls within Unit 4 as discussed in the unit descriptions below. We will consider certain areas for exclusion from final designation under section 4(b)(2) of the Act. Any exclusion in the final revised critical habitat designation could differ from the exclusions we made in the 2005 final critical habitat designation.

TABLE 3—(1) PROPOSED HABITAT DETERMINED TO BE ESSENTIAL, (2) PROPOSED HABITAT EXEMPTED PURSUANT TO 4(a)(3)(B)(i) OF THE ACT, (3) PROPOSED HABITAT BEING CONSIDERED FOR EXCLUSION PURSUANT TO SECTION 4(b)(2) OF THE ACT UNDER HCP, (4) PROPOSED HABITAT BEING CONSIDERED FOR EXCLUSION PURSUANT TO SECTION 4(b)(2) FOR NATIONAL SECURITY REASONS, (5) TOTAL PROPOSED HABITAT CONSIDERED FOR EXCLUSION, (6) TOTAL PROPOSED HABITAT CONSIDERED FOR EXEMPTION AND EXCLUSION, AND (7) TOTAL HABITAT PROPOSED AS REVISED CRITICAL HABITAT IN THIS 2011 RULE

(1) Habitat determined to be essential to the conservation of the Riverside fairy shrimp	4,972 ac (2,012 ha).
(2) Proposed habitat exempted pursuant to section 4(a)(3)(B)(i) of the Act (MCAS Miramar and MCB Camp Pendleton)	1,988 ac (805 ha).
(3) Proposed habitat being considered for exclusion pursuant to section 4(b)(2) of the Act under approved habitat conservation plan (HCP)	1,219 ac (493 ha).
(4) Proposed habitat being considered for exclusion pursuant to section 4(b)(2) for national security reasons	0 ac (0 ha).
(5) Total proposed habitat considered for exclusion	1,219 ac (493 ha).
(6) Total proposed habitat exempted or considered for exclusion	3,207 ac (1,298 ha).
(7) Total habitat proposed in 2011 as revised critical habitat (total proposed minus total exempted)	2,984 ac (1,208 ha).

We have identified several areas that are being considered for exclusion under section 4(b)(2) of the Act (see Table 3). In the 2005 rule, we excluded several subunits under section 4(b)(2) of the Act within the planning boundaries of: (a) The Orange County Southern Subregion HCP, (b) the draft City of Oceanside Subarea Plan and the City of Carlsbad's HMP under the MHCP, (c) the Western Riverside County MSHCP, and (d) the City and County of San Diego Subarea Plans under the MSCP. In this proposed revised critical habitat rule, we identified several areas we are considering for exclusion under section 4(b)(2) of the Act within the planning boundaries of, as follows: (a) The Orange County Central-Coastal subregional NCCP/HCP, (b) The Orange County Southern Subregion HCP, (c) the City of Carlsbad's HMP under the MHCP, (d) the Western Riverside County MSHCP, and (e) the County of San Diego Subarea Plan under the MSCP (see the Exclusions section).

We are requesting public comment on the potential exclusion of 89 ac (36 ha) covered by the Orange County Central-Coastal subregional NCCP/HCP; 233 ac (94 ha) covered by the Orange County Southern Subregion HCP; 865 ac (350 ha) covered by the Western Riverside County MSHCP; 9 ac (4 ha) covered by the Carlsbad HMP under the MHCP; and 23 ac (9 ha) covered by the County of San Diego Subarea Plan under the MSCP. Any exclusions we make in the final revised critical habitat designation may differ from the exclusions we made in the 2005 final critical habitat designation.

Areas designated as critical habitat units in this proposed rule are divided into five separate units (Units 1 through 5) which follow the six Management Areas presented in the 1998 Recovery Plan (Service 1998a, p. 38). We have combined two management areas identified in the 1998 Recovery Plan, the San Diego: North Coastal Mesas

Management Area and the San Diego: Central Coastal Mesas Management Area into one, single unit (Unit 4) for this proposed rule. The management areas are based primarily on geographical locations, although we have considered these locations in terms of underlying soil types and geomorphic processes, size and type of associated watershed, and topographic position (i.e., coastal mesa, inland valley, on granitic soils, etc.). Where possible, unit and subunit labels in this proposed rule follow previous naming conventions found in the 2005 critical habitat. We have retained original names associated with management areas, units, subunits, or pool complex names, where possible, to reduce confusion and promote consistency between previous rules and this proposed revision. Changes from the 2005 final critical habitat rule, however, include the following unit name reassignments: Unit 3 now includes land in Riverside County (land previously excluded from the 2005 designation of critical habitat and which, therefore, had no unit or subunit numbers assigned), and Unit 5 now incorporates Otay Mesa in southern San Diego County, previously labeled as Unit 4 in the 2005 rule. As with the 2005 final critical habitat rule, some land within the San Diego North and Central Coastal Mesa Management Areas (Service 1998a, p. 46) has not been proposed because these lands have been determined to be exempt under 4(a)(3)(B)(i) of the Act (MCAS Miramar and MCB Camp Pendleton) (see Tables 1 and 2 above; and Exemptions section below).

Following a new analysis of the best available scientific information, proposed habitat areas have been added or subtracted based on new information received. In Table 2 above, we have provided a comparison between the 2005 final critical habitat designation and this proposed revised critical habitat rule and identify the change in

area (by subunit) between the 2005 critical habitat designation and this proposed revised critical habitat designation. As already stated, some areas designated in the 2005 rule are not being proposed for designation because they do not meet the criteria used to identify areas essential to the conservation of Riverside fairy shrimp (see *Criteria Used to Identify Critical Habitat* for additional discussion). Further we are proposing to designate as revised critical habitat areas not considered in the 2005 final designation (Johnson Ranch Created Pools).

Two areas identified as meeting the definition of critical habitat in the 2004 proposed rule, but removed from the 2005 final critical habitat designation, are not proposed in this revision of critical habitat (Los Angeles Airport and March Air Reserve Base). The best available scientific and commercial data indicate these two areas no longer contain the physical and biological features essential to the conservation of the species and that the species has been extirpated. Further, we are not proposing three areas (Cruzan Mesa in Los Angeles, Banning in western Riverside County, and Wire Mountain in San Diego County) in this proposed rule, because we believe that these areas do not meet the definition of critical habitat, and because we do not possess sufficient data to substantiate Riverside fairy shrimp occurrence (we have conflicting accounts of positive species identification). San Mateo Pool (MCB Camp Pendleton, San Diego County) has been removed from our proposed designation because we possess insufficient data to evaluate its current status or condition, need for special management, or persistence of the occurrence and we, therefore, do not consider it to meet the definition of critical habitat. In the 2005 final critical habitat designation for Riverside fairy shrimp, we mentioned evidence of two vernal pools on or near tribal land

within the Pechanga Band of Luiseño Mission Indians reservation (6 ac (2 ha)) near the City of Temecula with possible historical occurrences, but, based on information available from 2004, we were unable to confirm these occurrences (70 FR 19199). Due to insufficient occurrence information and evidence of severely modified and impacted pools from years of discing and plowing, we are not proposing to designate critical habitat on tribal lands of the Pechanga Band of Luiseño Mission Indians (see Public Comments section above).

For three areas in this rule (portions of proposed Subunits 5b, 5c, and 5h), we have removed portions of the areas previously defined as essential in 2005 because, due to their proximity to the border and ongoing impacts from border patrol activities, we believe they no longer contribute to the long-term viability of Riverside fairy shrimp. More information about the units and subunits that contain the physical and biological features essential to the conservation of Riverside fairy shrimp and an explanation of how the added or removed areas do or do not contribute to the conservation of Riverside fairy shrimp is provided below in the Proposed Revised Critical Habitat Designation section.

In summary, on April 27, 2004, we proposed revised critical habitat of 5,795 ac (2,345 ha) in 5 units, including 19 subunits, located in Los Angeles, Orange, Riverside, San Diego and Ventura Counties. In response to information received during the public comment periods for our 2004 proposed critical habitat, refined mapping methodology, and re-evaluation of essential habitat, we removed 4,822 ac (1,951 ha) of non-essential habitat from the designation (Cruzan Mesa and Los Angeles Airport (Los Angeles County), March Air Reserve Base (Riverside County), and portions within southwestern and southeastern Otay Mesa (San Diego County)). In 2005, we designated approximately 306 ac (124 ha) as critical habitat for Riverside fairy shrimp in 4 units, one of which consisted of two subunits (1A and 1B) (70 FR 19154; April 12, 2005). For this proposed revision, we have included 5 units, including 25 subunits, comprising a total of 2,984 ac (1,208 ha) of land determined to be essential to the conservation of Riverside fairy shrimp.

Proposed Revised Critical Habitat Designation

We propose to designate 2,984 ac (1,208 ha) in 5 units, containing 25 subunits, as critical habitat for Riverside

fairy shrimp. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for Riverside fairy shrimp. The proposed revised critical habitat includes Riverside fairy shrimp habitat throughout the species' range in the United States. Proposed units generally correspond to the geographic areas identified as "Management Areas" in the 1998 Recovery Plan (Service 1998a, pp. 35–44). This proposed rule, when finalized, will supersede the 2005 critical habitat designation for Riverside fairy shrimp in 50 CFR 17.95(h).

The five map units proposed for designation as critical habitat are referred to by the following geographical names: (Map Unit 1) Ventura County (Transverse Range); (Map Unit 2) Los Angeles Basin—Orange County Foothills; (Map Unit 3) Riverside County Inland Valleys; (Map Unit 4) San Diego Northern and Central Coastal Mesas; and (Map Unit 5) San Diego Southern Coastal Mesas. Areas proposed as revised critical habitat are under Federal, State, local, and private ownership. The approximate area of proposed revised critical habitat by county and land ownership is shown in Table 4.

TABLE 4—PROPOSED REVISED CRITICAL HABITAT FOR RIVERSIDE FAIRY SHRIMP
[Not including exempted land]

Critical habitat unit	Federal land	State land	Local land	Private land	Total area
Unit 1: Ventura County			31 ac (13 ha)	435 ac (176 ha)	466 ac (189 ha).
1a. Tierra Rejada Preserve				18 ac (7 ha)	18 ac (7 ac).
1b. South of Tierra Rejada Valley			31 ac (13 ha)	417 ac (169 ha)	448 ac (182 ha).
Unit 2: Los Angeles Basin—Orange County Foothills.			142 ac (58 ha)	576 ac (233 ha)	718 ac (291 ha).
2c. (MCAS) El Toro			18 ac (7 ha)	8 ac (3 ha)	26 ac (11 ac).
2dA. Saddleback Meadows.			4 ac (2 ha)	252 ac (102 ha)	256 ac (104 ha).
2dB. O'Neill Regional Park—near Trabuco Canyon.			75 ac (30 ha)	15 ac (6 ha)	90 ac (37 ha).
2e. O'Neill Regional Park—near Cañada Gobernadora.			45 ac (18)	24 ac (10 ha)	69 ac (28 ha).
2f. Chiquita Ridge				56 ac (23 ha)	56 ac (23 ha).
2g. Radio Tower Road				51 ac (21 ha)	51 ac (21 ha).
2h. San Onofre State Beach, State Park-leased land (near Christianitos Creek foothills).				107 ac (43 ha)	107 ac (43 ha).
2i. SCE Viejo Conservation Bank.				63 ac (25 ha)	63 ac (25 ha).
Unit 3: Riverside Inland Valleys.		54 ac (22 ha) .....	.....	811 ac (328 ha)	865 ac (350 ha).
3c. Australia Pool				19 ac (8 ha)	19 ac (8 ha).
3d. Scott Road Pool				9 ac (4 ha)	9 ac (4 ha).
3e. Schleuniger Pool				23 ac (9 ha)	23 ac (9 ha).

TABLE 4—PROPOSED REVISED CRITICAL HABITAT FOR RIVERSIDE FAIRY SHRIMP—Continued
[Not including exempted land]

Critical habitat unit	Federal land	State land	Local land	Private land	Total area
3f. Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank).	.....	.....	.....	163 ac (66 ha)	163 ac (66 ha).
3g. Johnson Ranch Created Pools.	.....	54 ac (22 ha) .....	.....	.....	54 ac (22 ha).
3h. Santa Rosa Plateau—Mesa de Colorado.	.....	.....	.....	597 ac (242 ha)	597 ac (242 ha).
Unit 4: San Diego North and Central Coastal Mesas.	.....	6 ac (3 ha) .....	.....	3 ac (1 ha)	9 ac (4 ha).
4c. Poinsettia Lane Train Station.	.....	6 ac (3 ha) .....	.....	3 ac (1 ha)	9 ac (4 ha).
Unit 5: San Diego Southern Coastal Mesas.	40 ac (16 ha)	256 ac (104 ha)	157 ac (64 ha)	472 ac (191 ha)	925 ac (375 ha).
5a. Sweetwater (J33) .....	.....	.....	2 ac (less than 1 ha)	less than 1 ac (0 ha)	2 ac (less than 1 ha).
5b. Arnie's Point (J15)	29 ac (12 ha) .....	.....	.....	.....	29 ac (12 ha).
5c. East Otay Mesa .....	.....	.....	.....	57 ac (23 ha)	57 ac (23 ha).
5d. J29–31	less than 1 ac (0 ha)	211 ac (85 ha) .....	.....	159 ac (64 ha)	370 ac (149 ha).
5e. J2 N, J4, J5: (Robinhood Ridge).	.....	.....	32 ac (13 ha)	12 ac (5 ha)	44 ac (18 ha).
5f. J2 W and J2 S: (Hidden Trails, Cal Terraces, Otay Mesa Road).	.....	.....	22 ac (9 ha)	11 ac (4 ha)	33 ac (13 ha).
5g. J14 .....	.....	45 ac (18 ha)	18 ac (7 ha)	72 ac (29 ha)	135 ac (55 ha).
5h. J11 E and J11 W, J12, J16–18 (Goat Mesa).	11 ac (4 ha) .....	.....	83 ac (34 ha)	161 ac (65 ha)	255 ac (103 ha).
Totals	40 ac (16 ha)	316 ac (128 ha)	330 ac (135 ha)	2,297 ac (929 ha)	2,984 ac (1,208 ha).

Note: Sums of land areas may not total due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for Riverside fairy shrimp, below.

Unit 1: Ventura County Unit (Transverse Range)

Unit 1 is located in central Ventura County and consists of two occupied subunits totaling approximately 31 ac (13 ha) of local land and 435 ac (176 ha) of private land. This proposed unit includes the vernal pools near the city of Moorpark in Ventura County, at Tierra Rejada Preserve (formerly called Carlsberg Ranch) on the west side of State Highway 23, and a basin to the southeast of Carlsberg Ranch site, east of State Highway 23 called South of Tierra Rejada Valley. This unit occurs within the larger Santa Clara-Calleguas/Calleguas-Conejo Tierra Rejada Valley watershed, within the east-west trending Transverse (mountain) Range. The Transverse Range system was formed by the interaction of an east-west oceanic fault zone with the San Andreas Fault. Because the interaction of the two fault systems has been extensive and continues with rapid local uplift, Riverside fairy shrimp habitat within the Transverse Range reflects past activities of tectonic processes and their effects on watershed

development. Accelerated erosion, sedimentation, and debris processes, such as mud and rock flows, landslides, wind flows, and debris flows (i.e., soil-development processes), contribute to a unique set of physiochemical and geomorphic features for pools occupied by Riverside fairy shrimp.

Subunit 1a: Tierra Rejada Preserve

Subunit 1a is located near the City of Moorpark, in southeastern Ventura County, California. This subunit is located on what was formerly known as the Carlsberg Ranch, at the north end of the Tierra Rejada Valley, just west of State Highway 23. It is near the northeast intersection of Moorpark Road and Tierra Rejada Road in a residential housing development. Subunit 1a consists of 18 ac (7 ha) of privately owned land. The vernal pool (pond), 4.6 acres (1.7 ha) in size, is located in the Tierra Rejada Vernal Pool Preserve, owned and managed by Mountains Recreation and Conservation Authority (MCRA). Subunit 1a contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp.

This subunit is occupied at the time of listing and remains occupied. Resting cysts were detected in recent soil analyses (Chris Dellith 2010, pers.

comm.) and adult fairy shrimp were observed on April 7, 2011 (Judi Tamasi 2010, pers. comm.), the first observation of adults since the 2000–2001 ponding season. This area is essential to the conservation of this species for several reasons. The pool supports endangered Orcutt's grass (*Orcuttia californica*), which is an indicator of longer ponding duration. This pool is fundamentally different in terms of size, origin, depth and duration of ponding, contributing areas (watershed), and the thickness of the underlying sediments compared to flat areas of older soils with highly developed claypans and hardpans throughout the State (Hecht *et al.* 1998, p. 47); it was formed primarily by tilting and subsidence along the Santa Rosa fault (Hecht *et al.* 1998, p. 5). Given its geologic and hydrologic features and the associated wetland vegetation occurring within the subunit, this pool possesses a set of physical and biological factors unique to this occurrence to which the Riverside fairy shrimp has likely become adapted. The present biological resources and value of the pool have been sustained through “substantial disturbance and change in general area of the vernal pool” given history of land and water use and analysis of 60 years of aerial photography (Hecht *et al.* 1998, p. 6 and Appendix A). Although Lahti

et al. (2011) did not survey this pool during their completion of a rangewide genetic analysis, this occurrence does represent the northernmost extension of the species' occupied range, within a notably unique vernal wetland type (Hecht *et al.* 1998, p. 5 and see discussion below).

Subunit 1a contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including appropriate soil series (Azule, Calleguas, and Linne soil series; PCE 3) situated on a saturated fault between rocks of different permeability ("tectonogenic" Hecht *et al.* 1998, p. 5), and it is "sediment-tolerant" given that it possesses a watershed with reasonably steep slopes (10–50 percent slopes) with scrub vegetation yielding substantial amounts of sediment that provide nutrients, minerals, and hydrology (Hecht *et al.* 1998, p. 6). Additionally, because of adjacent urban development, altered hydrology, and potential for runoff, this vernal pool may require special management considerations or protection for the recovery of Riverside fairy shrimp. This subunit has one large ponding feature, and is essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65) at the species' northernmost geographical distribution.

Due to its unique geographic location and other features stated above, Subunit 1a is essential to the conservation of Riverside fairy shrimp. Although preliminary genetic studies are not definitive with regards to gene flow and genetic variability across the range of this species, populations at the edge of a species' distribution have been demonstrated to be important sources of genetic variation and may provide an important opportunity for colonization or re-colonization of unoccupied vernal pools and, thus, contribute to long-term conservation (and recovery) of the species (Gilpin and Soule 1986, pp. 32–33; Lande 1999, p. 6). Research on genetic differentiation among fairy shrimp species across their known distributions have demonstrated that geographically distinct populations may or may not be genetically distinct, but that they have unique genetic characteristics allowing for environmental changes (Bohonak 2003, p. 3; Lahti *et al.* 2010, p. 17). These characteristics may not be present in other parts of a species' range (Lesica and Allendorf 1995, p. 756). For these reasons, subunit 1a is uniquely situated and considered essential for recovery of the Riverside fairy shrimp.

The physical and biological features essential to the conservation of the

species in this subunit may require special management considerations or protection to address threats from nonnative plant species (nonnative grasses and *Schinus molle* (Peruvian pepper groves)) and alterations to the hydrologic cycle including type conversion of habitat; activities that remove or destroy the habitat assemblage of the pools, such as creation of fuel breaks, mowing, and grading; and human encroachment that occurs in the area. For example, inundation from artificial water sources can cause pools to stay inundated longer than normal or even convert vernal pools into perennial pools that are not suitable for Riverside fairy shrimp (Service 2008, p. 16). Please see *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 1b: South of Tierra Rejada Valley

Subunit 1b is located near the City of Moorpark in Ventura County, California. This proposed subunit is approximately 1.5 km (1 mi) southeast of Subunit 1a and east of State Highway 23. Subunit 1b consists of 31 ac (13 ha) of locally owned land and 417 ac (169 ha) of private land. We assume that Subunit 1b was not identified in the 1998 Recovery Plan (Appendix F) because at that time we were unable to confirm occupancy. To the best of our knowledge, this subunit has never been protocol surveyed to confirm presence or absence of Riverside fairy shrimp (Chris Dellith 2010, pers. comm.). This subunit, however, was proposed and designated as essential habitat in the previous 2005 proposed revised critical habitat rule because we considered it occupied (see discussion below) and because the necessary PCEs were present. Although we continue to presume Subunit 1b is occupied despite the absence of protocol survey results and have determined that the subunit contains the PCEs and therefore meets the definition of critical habitat under Section 3(5)(A)(i) of the Act, we are also proposing to designate Subunit 1b under Section 3(5)(A)(ii) of the Act. Even if Subunit 1b was not occupied at the time of listing, the subunit is essential for the conservation of the species due to its suitable habitat conditions, proximity to subunit 1a, and location at the northernmost extent of the species' range.

Subunit 1b is located approximately one mile to the south of Tierra Rejada Preserve (Subunit 1a), within the Tierra Rejada Valley watershed. Like Subunit

1a, this pool is one of the last representatives of what is believed to be a historic distribution of coastal terrace vernal pools common to the marine terraces and inland area of Ventura County prior to the 1950s. This subunit is considered occupied based on several factors which strongly suggest the likelihood of Riverside fairy shrimp occurrence. As discussed in the 2005 proposed rule (70 FR 19154, p. 19181) these are: (1) The important biotic and abiotic conditions (soil type, geology, morphology, local climate, topography, and plant associations, e.g. California Orcutt's grass) suggesting the presence of vernal pool ponding at appropriate season and for appropriate duration; (2) topographic features and ponding evidence based on aerial surveys confirming a ponding pool basin; (3) several large permanent and semi-permanent pools observed within the Subunit's local watershed; (4) proximity (less than 1 mi (1500 m)) to a known Riverside fairy shrimp occurrence and likely within the known dispersal distance expected for an invertebrate species with a resistant cyst stage; and (5) the determination that Subunit 1a and Subunit 1b are adjoined, based on fluvial and geomorphic evidence suggesting that the Tierra Rejada Valley river system once likely connected the two pools and would have provided the connectivity to disperse cysts between the two subunits.

Subunit 1b is proposed as revised critical habitat because we have determined it to be essential for the conservation of the species as it includes one or more pools capable of maintaining habitat function, genetic diversity, and species viability (Service 1998a, p. 65) for Riverside fairy shrimp at the northern limit of its current distribution, and it is near, and likely has connectivity with, a known occupied location of ecological and distributional significance. It is also identified as essential because best supporting evidence indicates the basin contains appropriate depth and ponding duration (PCEs 1), soils and topography (PCEs 2 and 3), elevation, and water chemistry (pH, temperature, salinity, etc.; PCE 1) to satisfy life-history needs of existing populations, either on-site or located nearby within subunit 1a.

Unit 2: Los Angeles Basin—Orange County Foothills

Unit 2 is located in central coastal Orange County and consists of 8 subunits totaling approximately 718 ac (291 ha) of land. This unit contains 142 ac (58 ha) of locally owned land, and 576 ac (233 ha) of privately owned land. Unit 2 falls within the Los Angeles

Basin-Orange Management Area as outlined in the 1998 Recovery Plan. The majority of vernal pools in this management area were extirpated prior to 1950, and only a small number of vernal pools remain in Los Angeles and Orange Counties (Service 1998a, p. 40). This unit includes the vernal pools and vernal pool-like ephemeral ponds located along a north-south band in the Orange County Foothills. This unit includes examples of the historic distribution of coastal terraces at moderate elevations (183 m to 414 m (600 ft to 1,358 ft)) and includes ephemeral ponds formed by landslides and fault activity, and remnant stream (fluvial) terraces along foothill ridgelines (Taylor *et al.* 2006, pp. 1–2).

Occupied Riverside fairy shrimp pools occur on: former Marine Corps Air Station (MCAS) El Toro; SCE Viejo Conservation Bank; Saddleback Meadows; O'Neill Regional Park—near Trabuco Canyon (east of Tijeras Creek at the intersection of Antonio Parkway and the Foothill Transportation Corridor (FTC-north segment)); O'Neill Regional Park—near Cañada Gobernadora; Chiquita Ridge; Radio Tower Road; and San Onofre State Beach, State Park-leased land (near Christianitos Creek foothills) that falls partially within MCB Camp Pendleton. These vernal pools are the last remaining vernal pools in Orange County known to support this species (58 FR 41384) and represent pools of a unique type of vernal pool habitat that differs from the traditional mima mound vernal pool complexes of coastal San Diego County, the coastal pools at MCB Camp Pendleton, and the inland pools of Riverside County (70 FR 19182).

The areas within Unit 2 were occupied at the time of listing, are still occupied, and contain the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3). In almost all cases, slow-moving or still surface water and/or saturated soils are present at or near vernal pool habitat. Conservation of an array of vernal pools supporting Riverside fairy shrimp in the foothill region of Orange County is essential to the conservation of the species by providing for necessary habitat function, natural genetic diversity and exchange, and species viability in the central portion of the species' range.

Subunit 2c: (MCAS) El Toro

Subunit 2c is located in the City of Irvine, in southern Orange County, California. It is situated about 8 miles southeast of the city of Santa Ana and 12 miles northeast of the city of Laguna Beach. This subunit is approximately 0.75 km (0.5 mi) southeast of Portola Parkway and bounded to the northeast by California Highway 241. The Marine Corps Air Station (MCAS) El Toro was a jet air station supporting Pacific Fleet Marine Forces, and officially closed in 1999. Most of the MCAS El Toro site is in unincorporated territory over which the County of Orange has direct land use planning and development authority. Subunit 2c consists of 18 ac (7 ha) of locally owned land and 8 ac (3 ha) of private land. Subunit 2c contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. The habitat consists of a seasonal pond that appears to be artificial, and has been impacted, modified, and degraded by live munitions firings, groundwater contamination, and off-highway vehicle (OHV) use. Restoration of the pond began in 2001, and included the installation of monitoring wells for contamination and regular monitoring for Riverside fairy shrimp. Subunit 2c contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species (nonnative grasses) that occur in the vernal pool basins, the potential for ongoing groundwater contamination, and OHV impacts. Please see the *Special*

Management Considerations or Protection section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Subunit 2dA: Saddleback Meadows

Subunit 2dA is located in the community of Silverado, in southern Orange County, California. This subunit is near the St. Michaels College Preparatory School, east of El Toro Road, and south and west of Live Oak Canyon Road. Subunit 2dA consists of 4 ac (2 ha) of locally owned land and 252 ac (102 ha) of privately owned land. Subunit 2dA contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This vernal pool complex includes a series of natural and impounded cattle troughs that have been breached and degraded by past agricultural activities and urban development. In addition, Subunit 2dA is an important link to the northern occupied locations, and represents a nearby source for re-colonization of pools in the Orange County foothills. Proposed Subunit 2dA contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species, development, or grazing that may occur in the vernal pool basins. Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to

Riverside fairy shrimp habitat and potential management considerations. We are considering portions of this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Subunit 2dB: O'Neill Regional Park—Near Trabuco Canyon

Subunit 2dB is located approximately 1.5 km (1 mi) southeast of Subunit 2dA in southern Orange County, California. This subunit is west of Live Oak Canyon Road, and northeast of the O'Neill Regional Park—near Cañada Gobernadora (see Subunit 2e below). In the 2008 5-year review, this area was referred to as 'O'Neill Park/Clay Flats pond property' (Service 2008, p. 7). Subunit 2dB consists of 75 ac (30 ha) of locally owned land (State Parks) and 15 ac (6 ha) of privately owned land. Subunit 2dB was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "Orange County Foothills (undescribed)" heading in Appendix F (Service 1998a, p. F1).

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This proposed subunit 2dB contains the physical and biological features essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3). A portion of this subunit lies at 1,413 ft (431 m) and is among the highest elevation occurrences of Riverside fairy shrimp.

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and activities such as unauthorized recreational use, OHV use, and fire management. Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of

the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering portions of this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Subunit 2e: O'Neill Regional Park—Near Cañada Gobernadora/east of Tijeras Creek

Subunit 2e is located near the City of Rancho Santa Margarita in southern Orange County, California. This subunit is east of Cañada Gobernadora and bounded to the west by California Highway 241. In the 2008 5-year review, this area was referred to as east of Tijeras Creek complex (Service 2008, p. 7). Subunit 2e consists of 45 ac (18 ha) of locally owned land and 24 ac (10 ha) of private land. Subunit 2e was not specifically identified in the 1998 Recovery Plan (Appendix F), but was classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "Orange County Foothills (undescribed)" heading in Appendix F (Service 1998a, p. F1).

This subunit is considered essential to the conservation of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Areas within this proposed subunit contain clay, clay loam, or sandy loam and consist primarily of dry-land agriculture and sagebrush-buckwheat scrub habitat. Located in the water drainages of the foothills of the Santa Ana Mountains, this pool rests in a canyon bottomland at approximately 919 ft (280 m) of elevation. Subunit 2e contains the physical and biological features essential to the conservation of Riverside fairy shrimp because it: (1) Contains the PCEs for Riverside fairy shrimp, including clay soils and loamy soils underlain by a clay subsoil (PCE 3), areas with a natural, generally intact surface and subsurface soil structure (PCE 2), and the ephemeral habitat (PCE 1) that support Riverside fairy shrimp, including slow-moving or still surface water and/or saturated soils; and (2) supports a stable, persistent occurrence of the species.

The physical and biological features essential to the conservation of the species in this subunit may require

special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., surrounding residential and commercial development, unauthorized recreational use, OHV use, and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering portions of this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Subunit 2f: Chiquita Ridge

Proposed Subunit 2f is located in the community of Trabuco, a small unincorporated community north of the town of Rancho Santa Margarita in Rancho Mission Viejo, in the southern Orange County foothills of California. This subunit is west of the Cañada Chiquita Valley, east of Antonio Parkway, and approximately 3.5 km (2.25 mi) north of Ortega Highway State Route 74. This proposed subunit consists of 56 ac (23 ha) of privately owned land. Subunit 2f contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This site has two vernal pools with confirmed Riverside fairy shrimp occupancy and which formed in depressions created by landslide-like movements of the earth. These pools and Subunit 2h (described below) have been referred to as either earthen slumps, or "sag" pools. In addition, the federally endangered San Diego fairy shrimp co-occurs within this subunit. Chiquita Ridge is within the San Juan Creek watershed and includes the perennial streams of Cañada Gobernadora and Trabuco Creek. Radio Tower Road—Subunit 2g (see next subunit description)—is also within this watershed (Dudek and Associates 2001b). Proposed Subunit 2f contains the physical and biological features

essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities, including, grazing, discing, and water quality degradation. Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 2g: Radio Tower Road

Subunit 2g is located in southern Orange County, California, east of Antonio Parkway, south/southwest of the Ortega Highway, and to the northwest of Trampas Canyon. Subunit 2g consists of 51 ac (21 ha) of privately owned land. Subunit 2g was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "Orange County Foothills (undescribed)" heading in Appendix F (Service 1998a, p. F1).

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This site provides habitat for Riverside fairy shrimp as well as the federally endangered San Diego fairy shrimp. While this plan highlights the conservation value of the vernal pools at this site, the area has not yet been set aside as a preserve. One pool occurs at the northern end of the subunit, and a second pool occurs to the south. Subunit 2g contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland

habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils (Soper gravelly loams) that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., grazing and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Subunit 2h: San Onofre State Beach, State Park-Leased Lands

Subunit 2h is located along the border shared between Orange and San Diego Counties, southeast of Richard Steed Memorial Park, and north of Christianitos Road. Nearly one-half of this proposed subunit (105 ac (42 ha)) occurs on Department of Defense (DOD) land on MCB Camp Pendleton and is determined exempt under section 4(a)(3)(B)(i) of the Act. Notwithstanding, Subunit 2h consists of 105 ac (42 ha) of federally owned (DOD) land and 107 ac (43 ha) of privately owned land. The portion of Subunit 2h which falls within DOD land, the "Cal State Parks Lease" as described in the 2007 INRMP (U.S. Marine Corp 2007, p. 2–30) is part of a lease agreement made on September 1, 1971, for a 50-year term. At one time, approximately 24,000 acres of land at Camp Pendleton was outleased for sheep grazing (U.S. Marine Corp 2007, p. 2–29). Around 2003, all sheep grazing outleases were cancelled (U.S. Marine Corp 2007, p. 2–29). As the largest single leaseholder on the MCB Camp Pendleton, specific uses no longer include grazing but include within portions of Subunit 2h include: Military thoroughfares (roads), military training with advanced coordination, utility easements, fire suppression activities, and public recreation. Subunit 2h is a Riverside fairy shrimp location that was discovered after the 1993 listing rule and 1998 Recovery Plan were written.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). It represents an

important ecological linkage for genetic exchange between the coastal mesa pools of San Diego and the Orange County Foothills occurrences. Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 2h consists of two sag pools at the eastern section of the unit and its associated upland watersheds on land within Orange County near the City of San Clemente. Subunit 2h contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., military activities, unauthorized recreational use, agricultural runoff, OHV use, and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. Essential habitat within the boundaries of Camp Pendleton has been exempted from critical habitat under section 4(a)(3)(B)(i) of the Act.

Subunit 2i: SCE Viejo Conservation Bank

Subunit 2i is located near the City of Lake Forest in southern Orange County, California. This subunit is bounded by Glenn Ranch Road to the north, El Toro Road to the southeast, and California Highway 241 to the southwest. Subunit 2i consists of 63 ac (25 ha) of privately owned land. Subunit 2i was not specifically identified in the 1998 Recovery Plan (Appendix F) but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "Orange County Foothills (undescribed)" heading in Appendix F (Service 1998a, p. F1).

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is

identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 2i contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., development, unauthorized recreational use, OHV use, and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see the Exclusions section of this proposed rule for more information.

Unit 3: Riverside County Inland Valleys

Unit 3 is located in western Riverside County, California, and consists of 6 subunits totaling 865 ac (350 ha). This unit contains 54 ac (22 ha) of State land and 811 ac (328 ha) of private land. These totals do not include lands formerly identified in 2005 as essential within March Air Reserve Base (3b; 101 ac (41 ha)) and inside the Pechanga Band of Luiseño Mission Indians reservation (6 ac (2 ha)) near the City of Temecula. These areas have been removed from this proposed revised designation (see Summary of Changes from Previously Designated Critical Habitat section of this rule). This unit contains natural vernal pool complexes, detention ponds, and created (enhanced) ephemeral basins included within the general vicinity of the Back Basin of Lake Elsinore, pools north and east of the City of Murrieta, and pools on Mesa de Colorado atop the Santa Rosa Plateau. The six subunits contained within Unit 3 are: Australia Pool, Scott Road Pool, Schleuniger Pool, Skunk Hollow, and Field Pool (also known as Barry Jones Wetland Mitigation Bank) (all previously identified as essential but excluded under section 4(b)(2) in 2005) (Service 2005, p. 19195); Johnson Ranch Created Pools; and two recently discovered

Riverside fairy shrimp occupied pools on Mesa de Colorado atop Santa Rosa Plateau (Selheim and Searcy 2010, p. 97).

Vernal pool and pool complexes in this unit are generally isolated to a degree from maritime influence, are greater than approximately 8 mi (15 km) in distance from the coast, and are representative of pools with alluvial or volcanic (basalt) soil types. Riverside fairy shrimp populations in this unit occur at the eastern limit of occupied habitat for Riverside fairy shrimp within the species' known range. The pools contain the primary constituent elements described above relating to ponding, consist of functionally intact watersheds, and possess appropriate underlying soil substrates (Los Posas loam, Los Posas rocky loam, Murrieta stony clay loam, Wyman loam, and Fallbrook rocky sandy loam) and appropriate topography and hydrology. Riverside County pools also are at the highest of all elevations among occupied pools for Riverside fairy shrimp, ranging from 385 m to 633 m (1,265 ft to 2,076 ft). All subunits within Riverside County are within the Western Riverside MSHCP.

Because Unit 3 occurs in an inland valley, and consists mainly of isolated pools (with the exception of the Santa Rosa Plateau) rather than the larger vernal pool complexes on coastal mesas, pools in this unit generally have larger watersheds and therefore represent a unique function and type of vernal pool habitat when compared to the other units. All subunits within this unit are known to be occupied, some recently documented (since 2005), including two pools recently confirmed as occupied by Riverside fairy shrimp on the Santa Rosa Plateau during a 2009 survey (Selheim and Searcy 2010, p. 98). This unit supports vernal pool complexes with several plant and animal genera endemic to California vernal pool habitats, including the federally endangered *Orcuttia californica*, *Pogogyne abramsii* (San Diego mesa mint), and vernal pool fairy shrimp (*Branchinecta lynchi*).

Subunit 3c: Australia Pool

Subunit 3c is located in the City of Lake Elsinore, northwest of Sedco Hills, in western Riverside County, California. This subunit is west of Interstate 15 and north of the Links at Summerly golf course, near the southeastern shore of Lake Elsinore. Subunit 3c consists of 19 ac (8 ha) of privately owned land. Subunit 3c was not identified in the 1998 Recovery Plan (Appendix F) (Service 1998a, p. F1). The pool is located in an area that has been graded,

is approximately 0.94 acre (less than 1 ha) in size and 20 in (25.4 cm) deep, and is considered to be an artificially modified vernal pool (CNDDB, September 21, 2010).

This subunit is considered essential for the conservation of Riverside fairy shrimp because it was occupied at the time of listing and is currently occupied and includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 3c contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., potential development, altered hydrology, OHV use, and water quality impacts). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 3d: Scott Road Pool

Subunit 3d is located in the City of Menifee in western Riverside County, California. This subunit is in the lot northeast of the intersection between Haleblain Road and Scott Road. Subunit 3d consists of 9 ac (4 ha) of privately owned land. Subunit 3d was not identified in the 1998 Recovery Plan (Appendix F) (Service 1998a, p. F1) as essential to the conservation of the species, because Subunit 3d had not been surveyed at the time it was written. However, this subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further,

it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 3d contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species, agricultural activities, and residential/commercial development that occur in the vernal pool basins. Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 3e: Schleuniger Pool

Subunit 3e is located in the City of Wildomar in western Riverside County, California. This subunit is bounded by Meadow Park Circle on the west and La Estrella Street to the south. Subunit 3e consists of 23 ac (9 ha) of privately owned land. Subunit 3e was not identified in the 1998 Recovery Plan (Appendix F) (Service 1998a, p. F1) as essential to the conservation of the species, because Subunit 3e had not been surveyed at the time it was written. However, this subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This vernal pool complex occurred naturally, but has been degraded from residential development and associated water discharge from surrounding properties. Subunit 3e contains the physical and biological features that are essential to the conservation of Riverside fairy

shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., residential water run-off and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 3f: Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank)

Subunit 3f is located in the City of Temecula in western Riverside County, California. This subunit is east of California Highway 79 and bounded by Murrieta Hot Springs Road to the south, Pourroy Road to the west, Bella Vista Sports Field off of Browning Street to the north, and Beeler Road to the east. Subunit 3f consists of 163 ac (66 ha) of privately owned land. Subunit 3f includes the Barry Jones Wetland Mitigation Bank, which comprises 140 acres (the 33-acre Skunk Hollow Pool and 107 acres of the pool's watershed). The Barry Jones Wetland Mitigation Bank was established in 1997 to serve as off-site compensatory mitigation for unavoidable impacts to wetland habitats (Center for Natural Lands Management 1997).

Subunit 3f contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species. This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. The isolated pool at Skunk Hollow is a relatively large (up to 10 ac (4 ha)) pool, verging

upon a vernal lake. It may remain wet through much of the year and only contain vernal pool plant species on its drying margins. This pool is the largest valley vernal pool remaining in all of southern California (Eriksen and Belk 1999, p. 104). This pool represents a set of physical (hydrological), ecological, and biological factors (including a unique vegetation assemblage) that make this pool different from other vernal pools in the species' range. Its habitat consists of a seasonally astatic (directionally changing) swale pool, deepened somewhat by excavation and located in a thin strip of disturbed coastal sage scrub and grassland vegetation (CNDDDB 2010). It contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils (Willows silty clay) that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., residential and commercial development, unauthorized recreational use, OHV use, and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 3g: Johnson Ranch Created Pools

Subunit 3g is located in the City of Temecula in western Riverside County, California. This subunit is approximately 1 mi (1.5 km) east of Subunit 3f and approximately 0.75 mi (1.25 km) south of Borel Road. Subunit 3g consists of 54 ac (22 ha) of State-owned land. Subunit 3g was not identified in the 1998 Recovery Plan (Appendix F) (Service 1998a, p. F1) because occupancy was established for Riverside fairy shrimp after the Recovery Plan was written.

This vernal pool complex is a Service-approved vernal pool restoration site created in January 2001. Seven basins (approximately 2 ac (0.8 ha) and a surrounding watershed of approximately 12 ac (5 ha)) were created to avoid permanent loss of the Riverside

fairy shrimp population at the Redhawk development (located in Temecula) and to offset adverse effects to Riverside fairy shrimp associated with grading, construction, and maintenance of the Redhawk residential development project. This subunit is considered essential to conservation and recovery of Riverside fairy shrimp because it is currently occupied; is located in a larger intact watershed free of adjacent commercial or residential development; includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65); represents an important historic population with a high baseline fairy shrimp density (at Redhawk properties) we determined was necessary to “provide[s] for long-term conservation of Riverside fairy shrimp and contribute[s] to an ongoing regional conservation effort, for the long-term survival of this endangered species” (Service 2001b, p. 11).

We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 3h: Santa Rosa Plateau—Mesa de Colorado

Subunit 3h is located on the Santa Rosa Plateau near the City of Murrieta in western Riverside County, California. This subunit is east/northeast of the intersection between Via Volcano and Avocado Mesa roads. Subunit 3h consists of 597 ac (242 ha) of privately owned land; more than half of the land (348 ac (141 ha)) is owned and conserved by The Nature Conservancy within the Santa Rosa Plateau Ecological Reserve. Subunit 3h contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species. The Santa Rosa Plateau pools are variable in size, ranging up to about 10 ac (4 ha) (vernal lake) and occur on the Mesa de Colorado and adjacent mesas on basalt (volcanic) flows. There are fewer than a dozen of these pools Statewide (Keeler-Wolf *et al.* 1998, p. 77).

This subunit is considered essential for the recovery of Riverside fairy shrimp because it is the last representative pool on the Southern Basalt Flow; it was occupied at the time of listing; is currently occupied; and it includes one or more pools essential to maintain habitat function, genetic diversity and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, clay-loam

soils over granitic substrate, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp’s life-history needs. Land within this subunit contain Las Posas loam, Ramona sandy loam, Willows silty clay, and Wyman loam soil series, and vegetation consists primarily of annual and needlegrass grassland and vernal pool habitats. Subunit 3h contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp: Clay loam soil series underlain by heavy clay loams or clays derived from olivine basalt lava flows that generally occur on mesas and gentle to moderate slopes (2 to 15 percent slopes) (i.e., PCE 1, 3) and areas with a natural, generally intact surface and subsurface soil structure that support Riverside fairy shrimp (PCE 2). Subunit 3h supports a stable occurrence of Riverside fairy shrimp, provides potential connectivity between occurrences of Riverside fairy shrimp, supports a unique habitat type, and is at the highest elevation for Riverside fairy shrimp occupied pools throughout the species’ range (2,076 ft (633 m)). Because these pools occur on an expansive mesa at higher altitude, they generally also have much larger watersheds for pool size, and represent a physically, ecologically, and genetically unique assemblage essential to the long-term conservation of the species. This unit also supports the federally endangered *Orcuttia californica* and supports the southernmost population of the vernal pool fairy shrimp.

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., grazing, unauthorized recreational use, OHV use, fire management, and water quality discharge). Please see the *Special Management Considerations or Protection* section of this rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Unit 4: San Diego Northern Coastal Mesa and Central Coastal Mesa Management Unit

Unit 4 is located in north and central coastal San Diego County, and includes vernal pools associated with coastal terraces north of the San Dieguito River (i.e., northern Coastal Mesa

Management Unit, including MCB Camp Pendleton and the City of Carlsbad) and the coastal terraces and mesa of central San Diego County from the San Dieguito River south to San Diego Bay and north of the Sweetwater River (Central Coastal Mesa Management Unit; see Service 1998a, p. 43).

Within Unit 4, eight areas on MCB Camp Pendleton and one area on MCAS Miramar identified as essential habitat are exempt from this proposed revised critical habitat designation. These MCB Camp Pendleton areas are exempt under section 4(a)(3)(B)(i) of the Act because they are covered by the 2007 integrated natural resources management plan (INRMP), which provides a benefit to Riverside fairy shrimp (see Exemptions section of this proposed rule for a detailed discussion). MCB Camp Pendleton has several large vernal pool complexes that support Riverside fairy shrimp. Land exempt (1,929 ac (780 ha)) from critical habitat designation on MCB Camp Pendleton includes: San Onofre State Beach, State Park-leased lands, near Christianitos Creek foothills (along the northwest corner of MCB Camp Pendleton); area south of San Onofre State Beach, in Uniform Training Area; Las Pulgas North; Las Pulgas East; Las Pulgas West; Cocklebur North; Cocklebur South; and Stuart Mesa. All these pool complexes occur within the San Diego North Coastal Mesas Management Area as identified in the 1998 Recovery Plan.

Also exempt from this proposed revised critical habitat are the vernal pools within the San Diego Central Coastal Mesa Management Area, as identified in the 1998 Recovery Plan, which contains 59 ac (24 ha) of land, all on MCAS Miramar. MCAS Miramar is exempt in this proposed revised critical habitat designation for Riverside fairy shrimp under section 4(a)(3)(B)(i) of the Act because MCAS Miramar has completed an INRMP (U.S. Marine Corps 2006) that provides a benefit to Riverside fairy shrimp (see the Exemptions section of this proposed rule for a detailed discussion).

Subunit 4c: Poinsettia Lane Commuter Train Station

Subunit 4c is located adjacent to the City of Carlsbad in San Diego County, California. This subunit is loosely bounded by Avenida Encinas on the north, a housing development on the east, Poinsettia Lane on the south, and train tracks to the west. Subunit 4c consists of approximately 9 ac (3 ha) that contains 6 ac (2 ha) of public land owned by the North County Transit District, and 3 ac (1 ha) of private land.

Subunit 4c contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species.

The subunit includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is identified as essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 4c is an isolated habitat, representative of a unique type of vernal pool that no longer has extensive distribution. This vernal pool, north of San Dieguito River in San Diego County, and adjacent to the Poinsettia Lane Commuter Station in the City of Carlsbad, is representative of the last remaining coastal terrace vernal pool basin, with the exception of some vernal pool complexes located on MCB Camp Pendleton. The Poinsettia Lane vernal pools represent the most coastal location where the San Diego fairy shrimp and the Riverside fairy shrimp co-occur. Because this complex is associated with a remnant of coastal terrace habitat, has a unique community assemblage, and is one of the last remaining coastal occurrences of Riverside fairy shrimp, it is considered essential for the conservation of the species. The Poinsettia Lane vernal pool complex consists of a series of vernal pools that run parallel to a berm created by the train tracks. Subunit 4c contains the primary constituent elements relating to the pooling basins, watersheds, underlying soil substrate and topography. Subunit 4c contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and activities (e.g., unauthorized recreational use and water quality discharge). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations. We are considering this subunit for

exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Unit 5: San Diego Southern Coastal Mesas

Unit 5 is located in Southern San Diego County and consists of eight subunits totaling 925 ac (375 ha). This unit contains 40 ac (16 ha) of federally owned land, 256 ac (104 ha) of State-owned land, 157 ac (64 ha) of locally owned land, and 472 ac (191 ha) of private land. This unit falls within the San Diego Southern Coastal Management Area, as identified in the 1998 Recovery Plan. Land proposed as critical habitat includes vernal pool complexes within the jurisdictions of the Service, City of San Diego, County of San Diego, Department of Homeland Security (Border Crossing, formerly INS), other DOD land, and private interests. This unit contains several mesa-top vernal pool complexes on western Otay Mesa (Bauder vernal pool complexes J2 N, J2 S, J2 W, J4, J5, J11 W, J11 E, J12, J15, J16–18, J33) and eastern Otay Mesa (Bauder pool complexes J29–31, and J33) as in Appendix D of City of San Diego (2004). These vernal pool complexes are associated with coastal mesas from the Sweetwater River south to the U.S.-Mexico International Border and represent the southern-most occurrences of Riverside fairy shrimp in the United States. This unit also contains most of the species' genetic diversity based on rangewide analyses, with Otay Mesa pools being significantly differentiated from one another (Lahti *et al.* 2010, p. 19). This area is essential to the conservation of the Riverside fairy shrimp for the following reasons: (1) These vernal pool complexes represent the few remaining examples of the much larger and mostly extirpated vernal pool complexes on the highly urbanized Otay Mesa (Bauder 1986); (2) recent genetic work indicates that complexes within this unit (J26, and J29–30) support Riverside fairy shrimp with a unique haplotype (B); and (3) it is only one of three locations that supports haplotype C (Lahti *et al.* 2010). Maintaining this unique genetic structure may be crucial in the conservation of this species.

Subunit 5a: Sweetwater (J33)

Subunit 5a is located in the City of San Diego in southern San Diego County, California. This subunit is at Sweetwater High School (site J33), south of the intersection between Otay Mesa and Airway roads. Subunit 5a consists of 2 ac (<1 ha) of locally owned land and <1 ac (0 ha) of private land. Subunit

5a contains areas identified in the 1998 Recovery Plan (Appendix F) as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp, as well as other proposed and listed vernal pool species.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. This subunit is under the jurisdiction of the Sweetwater Union High School District. Subunit 5a contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils (Olivenhain cobbly loam soil series) that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., unauthorized recreational use and OHV use). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5b: Arnie's Point (J15)

Subunit 5b is located in the Otay Mesa region of southern San Diego County, California. This subunit is bounded by the U.S.-Mexico International Border to the south and a warehouse at the end of Calle de Linea to the east. Subunit 5b consists of 29 ac (12 ha) of federally owned land. Subunit 5b was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1).

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains

appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5b supports a stable occurrence of Riverside fairy shrimp and provides potential connectivity between occurrences of Riverside fairy shrimp in northern Mexico and southern San Diego. Subunit 5b contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and activities (e.g., military exercises and OHV use). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5c: East Otay Mesa

Subunit 5c is located in the eastern Otay Mesa region of southern San Diego County, California. This subunit is approximately 1.75 mi (2.75 km) southeast of Kuebler Ranch and just north of the U.S.-Mexico International Border. Subunit 5c consists of 57 ac (23 ha) of privately owned land. These lands fall within the County of San Diego Subarea Plan under the San Diego MSCP. Subunit 5c was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. The vernal pool in this subunit has been impacted by off-road vehicle use, cattle grazing, and nonnative grasses. Subunit 5c

contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., development, OHV use, water run-off, and grazing). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5d: J29–31

Subunit 5d is located in the Otay Mesa region of southern San Diego County, California. This subunit is to the east and west of California Highway 125, south of the Otay Valley, and north of the U.S.-Mexico International Border. Subunit 5d consists of less than 1 ac (0 ha) of federally owned land, 211 ac (85 ha) of State-owned lands (Caltrans), and 159 ac (64 ha) of private land. Subunit 5d was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5d is predominantly in the City of San Diego in San Diego County, California, although portions of pools J29–31 are within the County of San Diego's jurisdiction. This subunit contains a large area of habitat that supports sizable occurrences of Riverside fairy shrimp and provides potential connectivity between occurrences of Riverside fairy shrimp in Subunits 5e and 5c. This subunit contains several mesa-top vernal pool complexes on

eastern Otay Mesa (Bauder vernal pool complexes J22, J29, J30, J31 N, J31 S as in Appendix D of City of San Diego, 2004, and Service GIS). Subunit 5d contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., OHV use, unauthorized recreational use, impacts from development (including water run-off), and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

We are considering a portion of this subunit for exclusion under 4(b)(2) of the Act; please see Exclusions section of this proposed rule for more information.

Subunit 5e: J2 N, J4, J5 (Robinhood Ridge)

Subunit 5e is located in the Otay Mesa region of southern San Diego County, California. This subunit is approximately 1 mi (1.5 km) east of Ocean View Hills Parkway, 0.6 mi (1 km) north of California Highway 905, and bounded by Vista Santo Domingo to the east. Subunit 5e consists of 32 ac (13 ha) of locally owned land and 12 ac (5 ha) of private land. Subunit 5e was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5e contains the physical and biological features that are essential to the

conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., OHV use, unauthorized recreational use, impacts from development, and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5f: J2 W and J2 S (Hidden Trails, Cal Terraces, and Otay Mesa Road)

Subunit 5f is located in the Otay Mesa region of southern San Diego County, California, and consists of three pool complexes. All complexes are located north of California Highway 905 and southwest of subunit 5e, with one complex in the lot southwest of Ocean View Hills Parkway, one bounded to the west by Hidden Trails Road, and one bounded by Corporate Center Drive to the west. Subunit 5f consists of 22 ac (9 ha) locally owned land and 11 ac (4 ha) of private land. Subunit 5f was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5f contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils

that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., OHV use; unauthorized recreational use; impacts from development, including water runoff; and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5g: J14

Subunit 5g is located in the Otay Mesa region of southern San Diego County, California. This subunit is south of California Highway 905, southeast of Caliente Avenue, west of Heritage Road, and northwest of Spring Canyon. Subunit 5g consists of 45 ac (18 ha) of State-owned land (Caltrans), 18 ac (7 ha) of locally owned land, and 72 ac (29 ha) of private land. Subunit 5g was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5g contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., OHV use; unauthorized recreational use; impacts from development, including water run-

off; and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Subunit 5h: J11 E and J11 W, J12, J16–18 (Goat Mesa)

Subunit 5h is located in the Otay Mesa region of southern San Diego County, California. This subunit is north and west of subunit 5b, bounded by the U.S.-Mexico International Border to the south, and dissected by Jeep Trail. Subunit 5h consists of 11 ac (4 ha) of federally owned (DHS lands), 83 ac (34 ha) of locally owned land, and 161 ac (65 ha) of privately owned land. The locally owned land is held by the City of San Diego, and the privately owned land includes holdings by Pardee Homes. Subunit 5h was not specifically identified in the 1998 Recovery Plan (Appendix F), but is classified as necessary to stabilize and protect (conserve) existing populations of Riverside fairy shrimp within the "J2, J5, J7, J11–21, J23–30 Otay Mesa" heading in Appendix F (Service 1998a, p. F1). This subunit was occupied at the time of listing and is currently occupied.

This subunit is considered essential for the recovery of Riverside fairy shrimp because it includes one or more pools essential to maintain habitat function, genetic diversity, and species viability (Service 1998a, p. 65). Further, it is essential because the basin contains appropriate depth and ponding duration, soils, elevation, and water chemistry (pH, temperature, salinity, etc.), which fulfill Riverside fairy shrimp's life-history needs. Subunit 5h contains the physical and biological features that are essential to the conservation of Riverside fairy shrimp, including ephemeral wetland habitat (PCE 1), intermixed wetland and upland habitats that act as the local watershed (PCE 2), and the topography and soils that support ponding during winter and spring months (PCE 3).

The physical and biological features essential to the conservation of the species in this subunit may require special management considerations or protection to address threats from nonnative plant species and anthropogenic activities (e.g., OHV use; unauthorized recreational use; impacts from development, including water runoff; and fire management). Please see the *Special Management Considerations or Protection* section of this proposed rule for a discussion of the threats to Riverside fairy shrimp habitat and potential management considerations.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of “destruction or adverse modification” (50 CFR 402.02) (see *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.*, 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

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. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, or are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency’s legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director’s opinion, avoid the likelihood of jeopardizing the continued existence of the listed species, or avoid the likelihood of destroying or adversely modifying critical habitat, or both.

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 we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency’s discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the “Adverse Modification” Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical

habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably reduces the conservation value of critical habitat for Riverside fairy shrimp. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species. For Riverside fairy shrimp, this includes supporting viable vernal pools containing the species and the associated microwatersheds upon which the pools depend.

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

Activities that may affect Riverside fairy shrimp critical habitat, when carried out, funded, or authorized by a Federal agency, will require section 7 consultation. These activities include, but are not limited to:

(1) Actions that result in ground disturbance. Such activities could include, but are not limited to, residential or commercial development, OHV activity, pipeline construction, new road construction or widening, existing road maintenance, manure dumping, and grazing. These activities potentially impact the habitat and physical and biological features essential to Riverside fairy shrimp by damaging, disturbing, and altering soil composition through direct impacts, increased erosion, and increased nutrient content. Additionally, changes in soil composition may lead to changes in the vegetation composition, thereby changing the overall habitat type.

(2) Actions that would impact the ability of an ephemeral wetland to continue to provide habitat for Riverside fairy shrimp and other native species that require this specialized habitat type. Such activities could include, but are not limited to, water impoundment, stream channelization, water diversion, water withdrawal, and development activities. These activities could alter the biological and physical features essential to the conservation of Riverside fairy shrimp by eliminating ponding habitat; changing the duration and frequency of the ponding events on which this species relies; making the habitat too wet, thus allowing obligate wetland species to become established; making the habitat too dry, thus allowing upland species to become

established; causing large amounts of sediment or manure to be deposited in Riverside fairy shrimp habitat; or causing increased erosion and incising of waterways.

(3) Actions that result in alteration of the hydrological regimes typically associated with Riverside fairy shrimp habitat, including actions that would impact the soil and topography that cause water to pond during the winter and spring months. Such activities could include, but are not limited to, deep-ripping of soils, trenching, soil compaction, and development activities. These activities could alter the biological and physical features essential to the conservation of Riverside fairy shrimp by eliminating ponding habitat, impacting the impervious nature of the soil layer, or making the soil so impervious that water pools for an extended period that is detrimental to Riverside fairy shrimp (see Primary Constituent Elements for Riverside Fairy Shrimp section above). These activities could alter surface layers and the hydrological regime in a manner that promotes loss of soil matrix components, ponding regimes, or hydrological connectivity to upland habitats to support the growth and reproduction of Riverside fairy shrimp.

(4) Road construction and maintenance, right-of-way designation, and regulation of agricultural activities, or any activity funded or carried out by a Federal agency that could result in excavation or mechanized land clearing of Riverside fairy shrimp critical habitat. These activities could alter the habitat in such a way that cysts of Riverside fairy shrimp are crushed, Riverside fairy shrimp are removed, or ephemeral wetland habitat is permanently altered.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- (2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.”

We consult with the military on the development and implementation of INRMPs for installations with federally listed species. We analyzed INRMPs developed by military installations located within the range of the proposed revised critical habitat designation for Riverside fairy shrimp to determine if they are exempt under section 4(a)(3) of the Act. The following areas are Department of Defense lands with completed, Service-approved INRMPs within the proposed revised critical habitat designation.

Approved INRMPs

MCB Camp Pendleton (Units 4 and portion of 2h)

In the previous final critical habitat designation for Riverside fairy shrimp, we exempted MCB Camp Pendleton from the designation (70 FR 19154; April 12, 2005). MCB Camp Pendleton completed their INRMP in November 2001, and updated the INRMP in March 2007 (U.S. Marine Corps 2007). The INRMP includes the following conservation measures for the Riverside fairy shrimp: (1) Surveys and monitoring, studies, impact avoidance and minimization, and habitat restoration and enhancement; (2) species survey information stored in MCB Camp Pendleton’s GIS database and recorded in a resource atlas which

is published and updated on a semi-annual basis; (3) application of a 984-ft (300-m) radius to protect the micro-watershed buffers around current and historic Riverside fairy shrimp locations; and (4) use of the resource atlas to plan operations and projects to avoid impacts to the Riverside fairy shrimp and to trigger section 7 consultations if an action may affect the species. These measures are established, ongoing aspects of existing programs and/or Base directives (e.g., Range and Training Regulations), or measures that are being implemented as a result of previous consultations.

MCB Camp Pendleton implements Base directives to avoid and minimize adverse effects to the Riverside fairy shrimp, such as: (1) Bivouac, command post, and field support activities should be no closer than 984 ft (300 m) to occupied Riverside fairy shrimp habitat year round; (2) Vehicle and equipment operations should be limited to existing road and trail networks year round; and (3) Environmental clearance is required prior to any soil excavation, filling, or grading. MCB Camp Pendleton has also demonstrated ongoing funding of their INRMP and management of endangered and threatened species. MCB Camp Pendleton continues to expend significant resources for management of federally listed species and habitat on their land, including management actions that provide a benefit for the Riverside fairy shrimp. Moreover, in partnership with the Service, MCB Camp Pendleton provides funding for Service biologists to assist in implementing their Sikes Act program and buffer land acquisition initiative.

Based on MCB Camp Pendleton’s past funding history for listed species and their Sikes Act program (including the management of Riverside fairy shrimp), we believe there is a high degree of certainty that MCB Camp Pendleton will continue to implement the INRMP in coordination with the California Department of Fish and Game and with the Service in a manner that provides a benefit to the Riverside fairy shrimp. We also believe that there is a high degree of certainty that the conservation efforts of their INRMP will be effective. Service biologists work closely with MCB Camp Pendleton on a variety of endangered and threatened species issues, including the Riverside fairy shrimp. The management programs and Base directives to avoid and minimize impacts to the species are consistent with current and ongoing section 7 consultations with MCB Camp Pendleton.

Lands that contain the features essential to the conservation of

Riverside fairy shrimp are within the following areas: San Onofre State Beach, State Park-leased land (near the Christianitos Creek foothills (portion of Subunit 2h); see paragraph below for discussion), Oscar One, Oscar Two, Victor, area south of Onofre State Park (Uniform Training Area), Red Beach, and Tango (U.S. Marine Corps 2007, Section 4, pp. 51–76).

State Park-leased lands are treated under the Real Estate Agreements and Lease section in the INRMP. Base real estate agreements (e.g., leases, easements, outleases, and assignments) cover approximately 5,000 ac of the Base (not inclusive of leased acreage within cantonment areas). These agreements include easements for public utilities and transit corridors; leases to public educational and retail agencies; State Beach leases; and agricultural leases for row crop production and seed collection.

In the portion of Subunit 2h within MCB Camp Pendleton boundaries, permissible activities include military thoroughfares (use of roads), military training (with advanced coordination), fire suppression activities, and public recreational access. Lessees are required to manage the natural resources on the lands leased for their use consistent with the philosophies and supportive of the objectives of the Camp Pendleton INRMP. Each lessee that manages and/or controls use of lands leased from Camp Pendleton (e.g., State Parks, agriculture leases) is required to generate and submit a natural resources management plan for their leased lands for approval by the Base within one year of establishment of their lease or renewal. Lessees are also required to identify any activity that may affect federally regulated resources (e.g., listed species, wetlands, waters of the United States) and provide information and mitigation that may be required to support consultation with the applicable regulatory agency.

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that all identified lands are subject to the MCB Camp Pendleton INRMP and that conservation efforts identified in the INRMP will provide a benefit to Riverside fairy shrimp and vernal pool habitat on MCB Camp Pendleton. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 1,929 ac (781 ha) of habitat in this proposed revised critical habitat designation because of this exemption.

MCAS Miramar (Within Unit 4)

In the previous final critical habitat designation for Riverside fairy shrimp, we exempted MCAS Miramar from the designation of critical habitat (70 FR 19154; April 12, 2005). MCAS Miramar completed an INRMP in May 2000, which was updated in October 2006 (Gene Stout and Associates *et al.* 2006). The INRMP is being implemented at MCAS Miramar. The INRMP provides for conservation, management, and protection of the Riverside fairy shrimp. The INRMP classifies nearly all of the vernal pool basins and watersheds on MCAS Miramar as a Level I Management Area. A Level I Management Area receives the highest conservation priority within the INRMP. Preventing damage to vernal pool resources is the highest conservation priority in management areas with the Level I designation. The conservation of vernal pool basins and watersheds in a Level I Management Area is achieved through educating base personnel; taking proactive measures to avoid accidental impacts, including signs and fencing; developing procedures to respond to and fix accidental impacts on vernal pools; and maintaining an updated inventory of vernal pool basins and associated vernal pool watersheds.

Since the completion of MCAS Miramar's INRMP, the Service has received reports on their vernal pool monitoring and restoration program and correspondence detailing the installation's expenditures on the objectives outlined in its INRMP. MCAS Miramar continues to monitor and manage its vernal pool resources. Ongoing programs include a study on the effects of fire management on vernal pool resources, vernal pool mapping, and species/vernal pool surveys. Based on the value MCAS Miramar's INRMP assigns to vernal pool basins and watersheds, and the management actions undertaken to conserve them, we find that the INRMP provides a benefit for the Riverside fairy shrimp.

Land that contains the features essential to the conservation of Riverside fairy shrimp is within the following area at MCAS Miramar: AA1 east complex, near the junction of Interstate 15 and Pomerado Road. Based on the aforementioned considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that conservation efforts identified in the INRMP provide a benefit to Riverside fairy shrimp and vernal pool habitat on 59 ac (24 ha) of habitat on the western portion of MCAS Miramar (Gene Stout and Associates *et al.* 2006, Section 7, pp. 17–23).

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the MCAS Miramar INRMP and that conservation efforts identified in the INRMP will provide a benefit to Riverside fairy shrimp occurring in habitats within or adjacent to MCAS Miramar. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 59 ac (24 ha) of habitat in this revised proposed critical habitat designation because of this exemption.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the legislative history is clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exercise our delegated discretion on behalf of the Secretary to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we may exercise our delegated discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When considering the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus, the educational benefits of mapping

essential habitat for recovery of the listed species, and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

In the case of Riverside fairy shrimp, the benefits of critical habitat include public awareness of Riverside fairy shrimp presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for Riverside fairy shrimp due to the protection from adverse modification or destruction of critical habitat. In practice, a Federal nexus exists only on Federal land or for projects undertaken, funded, or requiring authorization by a Federal agency.

When identifying the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to benefit national security; ameliorate disparate economic impacts; result in conservation; result in the continuation, strengthening, or encouragement of partnerships; or results in implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide. When we evaluate the existence of a conservation plan when considering the

benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized, how it provides for the conservation of the essential physical and biological features, whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future, whether the conservation strategies in the plan are likely to be effective, and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to determine whether the benefits of exclusion outweigh those of inclusion. If we determine that they do, we then determine whether exclusion would result in extinction. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

Based on the information from our economic analysis, provided by entities seeking exclusion, as well as any additional public comments we receive, we will evaluate whether certain lands

in the proposed revised critical habitat are appropriate for exclusion from the final designation pursuant to section 4(b)(2) of the Act. If we conclude that the benefits of excluding lands from the final designation outweigh the benefits of designating those lands as critical habitat, then we may exercise our delegated discretion to exclude the lands from the final designation.

We are considering exercising our delegated discretion to exclude the following lands from the critical habitat designation for Riverside fairy shrimp: Subunits 2c; 2i; portions of Subunits 2dA, 2dB, and 2e; 2f; 2g; all of Unit 3 (Subunits 3c, 3d, 3e, 3f, 3g, and 3h); Unit 4; and a portion of Subunit 5d.

We are considering whether to exclude these areas because:

(1) Their value for conservation will be preserved for the foreseeable future by existing protective actions, or

(2) They are appropriate for exclusion under the "other relevant factor" provisions of section 4(b)(2) of the Act.

However, we specifically solicit comments on the inclusion or exclusion of these areas. In the paragraphs below, we provide a detailed analysis of our proposed exclusion of these lands under section 4(b)(2) of the Act.

TABLE 5—AREAS BEING CONSIDERED FOR EXCLUSION FROM THE RIVERSIDE FAIRY SHRIMP PROPOSED REVISED CRITICAL HABITAT UNDER SECTION 4(B)(2) OF THE ACT

Subunit by plan**	Acreage
Orange County Central-Coastal NCCP	
2c. (MCAS) El Toro	26 ac (11 ha)
2i. SCE Viejo Conservation Bank	63 ac (25 ha)
<i>Subtotal for Orange County Central-Coastal Subregional NCCP/HCP</i>	<i>89 ac (36 ha)</i>
Orange County Southern Subregion HCP	
2dA. Saddleback Meadows	4 ac (2 ha)
2dB. O'Neill Regional Park—near Trabuco Canyon	75 ac (30 ha)
2e. O'Neill Regional Park—near Cañada Gobernadora/east of Tijeras Creek	47 ac (19 ha)
2f. Chiquita Ridge	56 ac (23 ha)
2g. Radio Tower Road	51 ac (21 ha)
<i>Subtotal for Orange County Southern Subregion HCP</i>	<i>233 ac (94 ha)</i>
Western Riverside County MSHCP	
3c. Australia Pool	19 ac (8 ha)
3d. Scott Road Pool	9 ac (4 ha)
3e. Schleuniger Pool	23 ac (9 ha)
3f. Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank)	163 ac (66 ha)
3g. Johnson Ranch Created Pools	54 ac (22 ha)
3h. Santa Rosa Plateau—Mesa de Colorado	597 ac (242 ha)
<i>Subtotal for Western Riverside County MSHCP</i>	<i>865 ac (350 ha)</i>
San Diego MHCP—Carlsbad HMP	
4c. Poinsettia Lane Commuter Train Station (JJ2)	9 ac (4 ha)
<i>Subtotal Carlsbad HMP under the San Diego MHCP</i>	<i>9 ac (4 ha)</i>

TABLE 5—AREAS BEING CONSIDERED FOR EXCLUSION FROM THE RIVERSIDE FAIRY SHRIMP PROPOSED REVISED CRITICAL HABITAT UNDER SECTION 4(B)(2) OF THE ACT—Continued

Subunit by plan**	Acreage
County of San Diego Subarea Plan under the MSCP	
5d. J29–31 (portion)	23 ac (9 ha)
<i>Subtotal County of San Diego Subarea Plan under the MSCP</i>	<i>23 ac (9 ha)</i>
Total	1,219 ac (493 ha)*

* Values in this table may not sum due to rounding.

** All lands that fall within the boundaries of an HCP are being considered for exclusion, with the exception of the City of San Diego Subarea Plan. Because the Riverside fairy shrimp is no longer a covered species under the City of San Diego's Subarea Plan under the MSCP (City relinquished their permit on April 20, 2010), we are not considering for exclusion critical habitat areas falling within the boundary of the City of San Diego Subarea Plan.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we are preparing a new analysis of the economic impacts of the proposed revised critical habitat designation and related factors.

We prepared and finalized an analysis of the economic impacts for the previous proposed critical habitat designation (Economic and Planning Systems, Inc. 2005). That economic analysis determined that retrospective costs (costs since listing, 1993–2004) total \$400 million. Total prospective costs of the 2004 proposed rule were \$70 to \$370 million in impacts that may occur in the 20 years (2004–2024) following the proposed designation of critical habitat. Based on the 2004 economic analysis, we concluded that the designation of critical habitat for Riverside fairy shrimp, as proposed in 2004, would not result in significant small business impacts. This analysis is presented in the notice of availability for the economic analysis published in the **Federal Register** on October 19, 2004 (69 FR 61461).

The prior economic analysis included costs coextensive with the listing of the species, in other words, costs attributable to the listing of the species as well as costs attributable to the designation of critical habitat. Because the Act directs the Secretary to consider the economic impacts of specifying any particular area as critical habitat, we believe the appropriate framework for analysis is to compare the costs associated with actions in a world with critical habitat to those costs likely to be incurred in the absence of critical habitat designation. Our new analysis will therefore focus on the specific costs attributable to designating the areas proposed in this proposed rule as critical habitat.

We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available for downloading from the Internet at <http://www.regulations.gov>, or by contacting the Carlsbad Fish and Wildlife Office directly (see **FOR FURTHER INFORMATION CONTACT** section). During the development of a final designation, we will consider economic impacts, public comments, and other new information, and areas may be excluded from the final critical habitat designation under section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19.

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat for reasons of national security. We consider whether there are lands owned or managed by the DOD or Department of Homeland Security (DHS) where a national security impact might exist. In preparing this proposal, we have exempted from the designation of critical habitat those Department of Defense lands with completed INRMPs determined to provide a benefit to Riverside fairy shrimp but where a national security impact may exist. Areas identified as owned and managed by DOD on MCB Camp Pendleton and MCAS Miramar that are exempt from critical habitat designation under section 4(a)(3) of the Act are discussed in the Exemptions section above. We are not proposing any lands for exclusions based on national security impacts under section 4(b)(2) of the Act in this proposed revised critical habitat.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in

addition to economic impacts and impacts on national security. We take into account a number of factors including whether there are habitat conservation plans (HCPs) or other management plans covering an area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

Land and Resource Management Plans, Conservation Plans, or Agreements Based on Conservation Partnerships

We are considering the exclusion of current land management or conservation plans (HCPs as well as other types) that include measures to protect and manage Riverside fairy shrimp and its habitat.

We are considering the exclusion of non-Federal lands covered by the Orange County Central-Coastal NCCP/HCP, the Orange County Southern Subregion HCP, the Western Riverside County MSHCP, City of Carlsbad HMP under the San Diego MHCP, and County of San Diego Subarea Plan under the MSCP that provide measures to protect Riverside fairy shrimp and its habitat (see Table 5 above for a list of areas we are considering for exclusion). Portions of the proposed revised critical habitat units for Riverside fairy shrimp may warrant exclusion from the designation of critical habitat under section 4(b)(2) of the Act based on the partnerships, management, and protection afforded under these approved and legally operative HCPs that are redundant with, and thus reduce the benefits provided by critical habitat designation. Only lands that fall within HCP boundaries are being considered for exclusion. All lands that fall within the boundaries of an HCP are being considered for

exclusion, with the exception of the City of San Diego Subarea Plan. Because the Riverside fairy shrimp is no longer a covered species under the City of San Diego's Subarea Plan under the MSCP (City relinquished their permit on April 20, 2010; see below), we are not considering excluding critical habitat areas falling within the boundary of the City of San Diego Subarea Plan. In this proposed rule, we are seeking input from the HCP stakeholders and the public as to reasons supporting whether or not we should exercise our delegated discretion to exclude these areas from the final critical habitat designation. We are requesting comments on the benefit to Riverside fairy shrimp from these plans (see Public Comments section).

We are not considering the exclusion of non-federal lands covered by the City of San Diego Subarea Plan under the MSCP. Based on a 2006 Federal district court ruling in *Center for Biological Diversity v. Bartel*, 98–CV–2234 (S.D.Cal.), the court enjoined the incidental take permit issued to the City of San Diego based on the City's Subarea Plan, as it applied to Riverside fairy shrimp and six other vernal pool species. The court held that the City's Subarea Plan does not provide adequate protection for Riverside fairy shrimp as a result of Plan deficiencies and in light of *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001). As a result, the City surrendered permit coverage for seven vernal pool species, including Riverside fairy shrimp on April 20, 2010, and the Service cancelled the permit insofar as it applied to the seven species on May 14, 2010. Because the Riverside fairy shrimp is no longer a covered species under the City of San Diego's Subarea Plan under the MSCP, we are not considering for exclusion critical habitat areas falling within the boundary of the City of San Diego Subarea Plan. The City is currently preparing a new HCP to obtain incidental take coverage for the Riverside fairy shrimp and other vernal pool species. Despite the City's relinquishment of their permit, 54 percent, or 1,369 pools of all currently identified vernal pool habitat within the boundaries of the City's subarea plan have been conserved by covenant of easement, conservation easement, or dedication in fee title to the City (City of San Diego 1997, 2006). The City continues to monitor and manage vernal pools in support of the MSCP.

Orange County Central-Coastal NCCP

The Orange County Central-Coastal NCCP/HCP was developed in cooperation with numerous local

jurisdictions, State agencies and participating landowners, including the cities of Anaheim, Costa Mesa, Irvine, Orange, and San Juan Capistrano; Southern California Edison; Transportation Corridor Agencies; The Irvine Company; California Department of Parks and Recreation; Metropolitan Water District of Southern California; and the County of Orange. Approved in 1996, the Central-Coastal NCCP/HCP provides for the establishment of approximately 38,738 ac (15,677 ha) of reserve land for 39 Federal or State-listed and unlisted sensitive species within the 208,713 ac (84,463 ha) plan area in central and coastal Orange County. The Orange County Central-Coastal NCCP/HCP is a multi-species conservation program that minimizes and mitigates expected habitat loss and associated incidental take of covered species within the plan area. The "Reserve System" created pursuant to the NCCP/HCP is designed to function effectively as a multiple-habitat and multiple-species reserve that specifically includes vernal pool habitat and Riverside fairy shrimp (R.J. Meade Consulting, Inc. 1996).

The Orange County Central-Coastal NCCP/HCP provides for monitoring and adaptive management of covered species and their habitat within this Reserve System (Consultation #1–6–FW–24, Service 1996, pp. 1–4). Conditionally covered species, including the Riverside fairy shrimp, receive protection not only through the establishment and management of the Reserve System, but also additional mitigation measures specified in the NCCP/HCP and Implementing Agreement (IA) (Service 1996, p. 6). Under the NCCP/HCP, incidental take for Riverside fairy shrimp is limited to highly degraded or artificial vernal pools. Take of Riverside fairy shrimp in non-degraded, natural vernal pool habitat is not authorized. If a planned activity will affect Riverside fairy shrimp in a highly degraded or artificial vernal pool, it "must be consistent with a mitigation plan that: 1) Addresses design modifications and other on-site measures that are consistent with the project's purposes, minimizes impacts, and provides appropriate protections for vernal pool habitat, 2) provides for compensatory vernal pool habitat restoration/creation at an appropriate location (which may include the reserve or other open space) and includes relocation of potential cyst-bearing soils, and 3) provides for monitoring and adaptive management of vernal pools consistent with Chapter 5 of this NCCP"

(R.J. Meade Consulting, Inc. 1996; p. 97).

Permittees implement the above conservation measures for Riverside fairy shrimp and other covered species over the 75-year permit term, as well as provide commitments in perpetuity regarding habitat protection for lands in the Reserve System and commitments outlined in the IA (R.J. Meade Consulting 1996, p. 12). The Service acknowledged in the IA that the Orange County Central-Coastal NCCP/HCP provides for the conservation, protection, restoration, enhancement, and management of the species covered under the plan (including Riverside fairy shrimp) and their habitats.

To date, monitoring and management related to Riverside fairy shrimp have included reserve-wide vernal pool surveys conducted from 1997 through 2001 and ongoing control of invasive nonnative vegetation in the upland environment. We are considering exercising our delegated discretion to exclude a total of 89 ac (36 ha) of land that are owned by or are under the jurisdiction of the permittees of the Orange County Central-Coastal NCCP/HCP (see Table 5 above).

Orange County Southern Subregion HCP

A large-scale HCP encompassing approximately 86,021 ac (34,811 ha) in southern Orange County, the Orange County Southern Subregion HCP is a multi-species conservation program that minimizes and mitigates expected habitat loss and associated incidental take of covered species. The Southern Subregion HCP was developed in support of applications for incidental take permits for 32 covered species, including Riverside fairy shrimp, by the County of Orange (County), Rancho Mission Viejo, LLC (Rancho Mission Viejo), and the Santa Margarita Water District (Water District) in connection with proposed residential development and related actions in southern Orange County. The Service issued permits based on the plan on January 10, 2007. The permit and plan cover a 75 year period.

The Southern Subregion HCP provides for the conservation of covered species, including Riverside shrimp, through the establishment of an approximately 30,426 ac (12,313 ha) habitat reserve and 4,456 ac (1,803 ha) of supplemental open space areas (Service 2007, p. 19), which primarily consists of land owned by Rancho Mission Viejo and three pre-existing County parks (Service 2007, pp. 10, 19). Subunits 2g and 2h fall within the boundaries of the habitat reserve of this HCP.

The Southern Subregion HCP is expected to provide benefits for the conservation of Riverside fairy shrimp through the implementation of the following conservation measures: conservation of vernal pools within the habitat reserve; minimizing impacts to vernal pools from development; maintaining water quality/quantity; controlling non-native invasive species; managing livestock grazing; and minimizing human access and disturbance. Specifically, any development must be located at least 1000 ft. (305 m) away from the vernal pools and be built at a lower elevation than the vernal pools to avoid hydrological alterations (Service 2007, p. 133). Water quality monitoring will be conducted throughout the life of the permit at occupied vernal pools near development (Service 2007, p. 133).

We acknowledged in the Implementing Agreement for the Orange County Southern Subregion HCP that the conservation strategy for this HCP provides a comprehensive, habitat-based approach to the protection of covered species and their habitats by focusing on the lands and aquatic resource areas essential for the long-term conservation of the covered species (including Riverside fairy shrimp) and by providing for appropriate management for those lands (Dudek 2007, p. 64). This acknowledgement was made for habitat within Subarea 1, which includes all of the habitat reserve lands, including Subunits 2g and 2h of the proposed critical habitat.

The Orange County Southern Subregion HCP currently provides conservation for the Riverside fairy shrimp habitat at O'Neill Regional Park, Chiquita Ridge, and Radio Tower Road, all within Unit 2, most of which is within the boundaries of the HCP. Unit 2g consists of 51 ac (21 ha), all of which is private land within the HCP. Unit 2f consists of 56 ac (23 ha) that is also private land within the HCP. Portions of Subunits 2dA (4 ac (2 ha)), 2dB (75 ac (30 ha)), and 2e (47 ac (19 ha)) also fall within the boundaries of the HCP. The land is conserved with conservation easements, and funds were designated for the management of this area to benefit vernal pool species, including Riverside fairy shrimp (Service 2007, pp. 15–17). We are considering exercising our delegated discretion to exclude a total of 233 ac (94 ha) of land that falls within the jurisdiction of the Orange County Southern Subregion HCP (see Table 5 above). We intend to exclude critical habitat from areas covered by the Orange County Southern Subregion HCP based on the protections outlined above and per the provisions

laid out in the IA, to the extent consistent with the requirements of 4(b)(2) of the Act. We encourage any public comment in relation to our consideration of the areas in portions of Subunits 2dA, 2dB, 2e, and subunits 2g and 2h for inclusion or exclusion (see Public Comments section above).

Western Riverside County Multiple Species Habitat Conservation Plan (Western Riverside County MSHCP)

The Western Riverside County MSHCP is a regional, multi-jurisdictional HCP encompassing approximately 1.26 million ac (510,000 ha) of land in western Riverside County. The Western Riverside County MSHCP addresses 146 listed and unlisted “covered species,” including Riverside fairy shrimp. The Western Riverside County MSHCP is a multispecies conservation program designed to minimize and mitigate the expected loss of habitat and associated incidental take of covered species resulting from covered development activities in the plan area. On June 22, 2004, the Service issued a single incidental take permit under section 10(a)(1)(B) of the Act to 22 permittees under the Western Riverside County MSHCP to be in effect for a period of 75 years (Service 2004). Core areas for Riverside fairy shrimp at Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank), Lake Elsinore Back Basin (Australia pool), and Murrieta (Schleuniger pool) will be conserved or will remain within the MSHCP Conservation Area. The Plan provides for the survival of the species within the Plan Area by ensuring the species is conserved within 90 percent of occupied areas with long-term conservation value, and will support recovery by enhancing habitat conserved for the species.

The Western Riverside County MSHCP, when fully implemented, will establish approximately 153,000 ac (61,917 ha) of new conservation lands (Additional Reserve Lands) to complement the approximate 347,000 ac (140,426 ha) of preexisting natural and open space areas (Public/Quasi-Public (PQP) lands) in the plan area. PQP lands include those under ownership of public agencies, primarily the U.S. Forest Service (USFS) and Bureau of Land Management (BLM), as well as permittee-owned or controlled open-space areas managed by the State of California and Riverside County. Collectively, the Additional Reserve Lands and PQP lands form the overall Western Riverside County MSHCP Conservation Area. The configuration of the 153,000 ac (61,916 ha) of Additional Reserve Lands (ARL) is not mapped or

precisely delineated (“hard-lined”) in the Western Riverside County MSHCP. Instead, the configuration and composition of the ARL are described in text within the bounds of the approximately 310,000-ac (125,453-ha) criteria area. ARL lands are being acquired and conserved as part of the ongoing implementation of the Western Riverside County MSHCP.

Species-specific conservation objectives are included in the Western Riverside County MSHCP for Riverside fairy shrimp. One objective is to conserve at least 11,942 ac (4,833 ha) of occupied or suitable habitat for the species. In addition, other areas within the Criteria Area identified as important for the Riverside fairy shrimp will be conserved. This objective is intended to be met through implementation of the Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools policy under the Plan, which states that for occupied properties, 90 percent of the area that provides long-term conservation value for Riverside fairy shrimp shall be conserved. We acknowledged in section 14.10 of the Implementing Agreement (IA) for the Western Riverside County MSHCP that the plan provides a comprehensive, habitat-based approach to the protection of covered species, including Riverside fairy shrimp, by focusing on lands essential for the long-term conservation of the covered species and appropriate management for those lands (WRCRCA *et al.* 2003, p. 51).

Consistent with the terms of the IA we are considering exercising our delegated discretion to exclude 865 ac (350 ha) of Riverside fairy shrimp habitat on permittee-owned or controlled land in Unit 3 that meets the definition of critical habitat for Riverside fairy shrimp within the Western Riverside County MSHCP under section 4(b)(2) of the Act. The 1993 final listing rule for Riverside fairy shrimp attributed the primary threat from present or threatened destruction, modification or curtailment of its habitat or to: urban and agricultural development, off-road vehicle use, cattle trampling, human trampling, road development, military activities, and water management activities (58 FR 41387; August 3, 1993). The 1993 final listing rule also identified other natural and manmade factors including introduction of nonnative plant species, competition with invading species, trash dumping, fire, fire suppression activities, and drought (58 FR 41389; August 3, 1993) as primary threats to Riverside fairy shrimp. The Western Riverside County MSHCP helps to address these threats through a regional planning effort, and

outlines species-specific objectives and criteria for the conservation of Riverside fairy shrimp. We intend to exclude critical habitat from areas covered by the Western Riverside County MSHCP based on the protections outlined above and per the provisions laid out in the IA, to the extent consistent with the requirements of 4(b)(2) of the Act. We encourage any public comment in relation to our consideration of the areas in Unit 3 for inclusion or exclusion (see Public Comments section above).

Multiple Habitat Conservation Program (MHCP), in San Diego County—Carlsbad HMP

The Multiple Habitat Conservation Program (MHCP) is a comprehensive, multi-jurisdictional, planning program designed to create, manage, and monitor an ecosystem preserve in northwestern San Diego County. The MHCP is also a subregional plan under the State of California's Natural Communities Conservation Plan (NCCP) program that was developed in cooperation with California Department of Fish and Game (CDFG). The MHCP preserve system (i.e., focused planning area or FPA) is intended to protect viable populations of native plant and animal species and their habitats in perpetuity, while accommodating continued economic development and quality of life for residents of northern San Diego County. The MHCP includes an approximately 112,000-ac (45,324-ha) study area within the cities of Carlsbad, Encinitas, Escondido, San Marcos, Oceanside, Vista, and Solana Beach. These cities will implement their respective portions of the MHCP through subarea plans. Only the City of Carlsbad has completed its subarea plan at this time, which is called the Carlsbad Habitat Management Plan (Carlsbad HMP). The section 10(a)(1)(B) incidental take permit and Implementing Agreement for the City of Carlsbad HMP were issued on November 12, 2004 (Service 2004c). Conservation requirements within the Carlsbad HMP for Riverside fairy shrimp include conserving 100 percent of the known Riverside fairy shrimp habitat and implementation of the MHCP's narrow endemic and no-net-loss of wetlands (including vernal pools) policies for any additional vernal pools discovered in MHCP planning area. These policies require all vernal pools and their watersheds within the MHCP study area to be 100 percent conserved, regardless of occupancy by Riverside fairy shrimp and regardless of location inside or outside of the FPA, unless doing so would remove all economic uses of a property. In the event that no project alternative is

feasible that avoids all impacts on a particular property, the impacts must be minimized and mitigated to achieve no net loss of biological functions and values (Service 2004, p. 330).

Unit 4c covers the Poinsettia Commuter Train Station vernal pool complex within the Carlsbad HMP, and consists of 9 ac (4 ha); 3 ac (1 ha) of private property and a 6-ac (2-ha) property owned by the North County Transit District. The Poinsettia Commuter Train Station vernal pool complex supports the only known occurrence of Riverside fairy shrimp within the boundaries of the Carlsbad HMP. The Riverside fairy shrimp is a conditionally-covered species under the Carlsbad HMP, and the City of Carlsbad will receive full coverage for this species when the Poinsettia Commuter Train Station vernal pool complex is managed, monitored and protected in perpetuity, as outlined in the biological opinion for the Carlsbad HMP (Service 2004, pp. 327–33). While funds have been designated through past consultations for managing and monitoring of these properties to benefit vernal pool species, including Riverside fairy shrimp, a long-term manager has not been identified and no one is currently managing or monitoring these properties. In addition, the properties are not protected with recorded conservation easements.

We agreed in the Implementing Agreement (IA) for the Carlsbad HMP that we would consider the Carlsbad HMP in the preparation of any proposed critical habitat designation for a covered species, and further acknowledged that the Carlsbad HMP incorporates special management actions to manage covered species and their habitats in a manner that will provide for the conservation of the covered species, including Riverside fairy shrimp (City of Carlsbad *et al.* 2004, p. 17).

We are considering exercising our delegated discretion to exclude under section 4(b)(2) of the Act a total of 9 ac (4 ha) that meet the definition of critical habitat for Riverside fairy shrimp within the Carlsbad HMP under the MHCP. We will analyze the benefits of inclusion and the benefits of exclusion of the area covered by this subarea plan in the final revised critical habitat rule for Riverside fairy shrimp. We encourage any public comment in relation to our consideration of the areas in Subunit 4c for exclusion (see Public Comments section above).

San Diego Multiple Species Conservation Program (MSCP)—County of San Diego Subarea Plan

Riverside fairy shrimp is covered under the County of San Diego Subarea Plan. We are considering exercising our delegated discretion to exclude lands covered by this plan (see Table 5 for a list of the areas that we are considering for exclusion). Portions of the proposed revised critical habitat units for Riverside fairy shrimp may warrant exclusion from the designation of critical habitat under section 4(b)(2) of the Act based on the partnerships, management, and protection afforded under this approved and legally operative HCP that are redundant with protections provided by critical habitat designation. Only lands that fall within HCP boundaries are being considered for exclusion. In this proposed rule, we are seeking input from the HCP stakeholders and the public as to reasons supporting whether or not we should exclude these areas from the final critical habitat designation.

The Multiple Species Conservation Program (MSCP) is a comprehensive habitat conservation planning program that encompasses 582,243 ac (235,626 ha) within 12 jurisdictions of southwestern San Diego County. The MSCP is a subregional plan that identifies the conservation needs of 85 federally listed and sensitive species, including the Riverside fairy shrimp, and serves as the basis for development of subarea plans by each jurisdiction in support of section 10(a)(1)(B) permits. The subregional MSCP identifies where mitigation activities should be focused, such that upon full implementation of the subarea plans approximately 171,920 ac (69,574 ha) of the 582,243-ac (235,626-ha) MSCP plan area will be preserved and managed for covered species. The MSCP also provides for a regional biological monitoring program, and Riverside fairy shrimp is identified as a first priority species for field monitoring.

Consistent with the MSCP, the conservation of Riverside fairy shrimp is addressed in the County of San Diego Subarea Plan. The County of San Diego Subarea Plan identifies areas that are hard-lined for conservation and areas where mitigation activities should be focused to assemble its preserve (i.e., Pre-approved Mitigation Area). Implementation of the County of San Diego Subarea Plan will result in a minimum 98,379-ac (39,813 ha) preserve area.

Subunit 5d is within the County of San Diego Subarea Plan and is identified as a hard-lined preserve area.

These hard-lined preserve lands were designated in conjunction with the Otay Ranch Specific plan and are to be conveyed to a land manager (e.g., County or Federal government) in phases such that 1.18 ac (0.48 ha) is conserved for every 1 ac (0.40 ha) developed. A natural resource management plan has been developed that addresses the preservation, enhancement, and management of sensitive natural resources on the 22,899-ac (9,267ha) Otay Ranch hard-lined preserve area (MSCP 1997, pp. 3–15).

In Section 9.17 of the Implementing Agreement (IA) for the Subarea Plan we agreed to consider the MSCP and County of San Diego Subarea Plan in our preparation of any proposed critical habitat designations concerning any covered species, including Riverside fairy shrimp (Service *et al.* 1998, p. 23).

We are considering exercising our delegated discretion to exclude from critical habitat a portion of subunit 5d covered by the County of San Diego Subarea Plan under section 4(b)(2) of the Act. This area encompasses approximately 23 ac (9 ha) of land.

Peer Review

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We will invite these peer reviewers to comment during the public comment period on our specific assumptions and conclusions in this proposed revised designation of critical habitat.

We will consider all comments and information we receive during the comment period on this proposed rule during our preparation of a final determination. Accordingly, the final decision may differ from this proposal.

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of this proposed rule in the **Federal Register**. Such requests must be sent to the address shown in the **FOR FURTHER INFORMATION CONTACT** section. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the

Federal Register and local newspapers at least 15 days before the hearing.

Required Determinations

Regulatory Planning and Review—Executive Order 12866

The Office of Management and Budget (OMB) has determined that this rule is not significant under Executive Order 12866 (Regulatory Planning and Review). OMB bases its determination upon the following four criteria:

(1) Whether the rule will have an annual effect of \$100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(2) Whether the rule will create inconsistencies with other Federal agencies' actions.

(3) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

(4) Whether the rule raises novel legal or policy issues.

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

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a certification statement of factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

We are preparing a new analysis of the economic impacts of this proposed revision to critical habitat for Riverside fairy shrimp. At this time, we lack current economic information necessary to provide an updated factual basis for the required RFA finding with regard to this proposed revision to critical habitat. Therefore, we defer the RFA finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act and Executive Order 12866. Upon completion of the draft economic analysis, we will announce availability

of the draft economic analysis of the proposed designation in the **Federal Register** and reopen the public comment period for the proposed designation. We will include with this announcement, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination. We have concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that we make a sufficiently informed determination based on adequate economic information and provide the necessary opportunity for public comment.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. We do not expect the designation of this proposed critical habitat to significantly affect energy supplies, distribution, or use. Based on an analysis conducted for the previous designation of critical habitat and extrapolated to this designation, along with a further analysis of the additional areas included in this revision, we determined that this proposed rule to designate revised critical habitat for Riverside fairy shrimp is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

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.*), we make the following findings:

(1) This rule would not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that

“would impose an enforceable duty upon State, local, or tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not expect this rule to significantly or uniquely affect small governments. Small governments would be affected only to the extent that any programs having Federal funds, permits, or other authorized activities must ensure that their actions would not

adversely affect the critical habitat. Therefore, a Small Government Agency Plan is not required. However, as we conduct our economic analysis for the rule, we will further evaluate this issue and revise this assessment if appropriate.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for Riverside fairy shrimp in a takings implications assessment. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. The takings implications assessment concludes that this designation of revised critical habitat for Riverside fairy shrimp would not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this proposed 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 proposed critical habitat designation with appropriate State resource agencies in California. The designation of critical habitat in areas currently occupied by the Riverside fairy shrimp imposes no 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 because the areas that contain the physical and biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat essential to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may

affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), it has been determined that the rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed to revise critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the elements of the physical and biological features essential to the conservation of Riverside fairy shrimp within the designated areas to assist the public in understanding the habitat needs of the species.

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

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency 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 (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

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), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes.

We determined that there are no tribal lands that were occupied by Riverside fairy shrimp at the time of listing that contain the features essential to the conservation of the species, and no tribal lands unoccupied by Riverside fairy shrimp that are essential for the conservation of the species. Therefore, we are not proposing to designate critical habitat for Riverside fairy shrimp on tribal lands. We will continue to coordinate with tribal governments as applicable during the designation process.

References Cited

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> and upon request from the Field Supervisor, Carlsbad Fish and Wildlife

Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this package are the staff members of the Carlsbad Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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. In § 17.95, amend paragraph (h) by revising the entry for “Riverside Fairy Shrimp (*Streptocephalus woottoni*)” to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(h) *Crustaceans*.

* * * * *

Riverside Fairy Shrimp (*Streptocephalus woottoni*)

(1) Unit descriptions are depicted for Ventura, Orange, Riverside, and San Diego Counties, California, on the maps below.

(2) Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of Riverside fairy shrimp consist of three components:

(i) Ephemeral wetland habitat consisting of vernal pools and ephemeral habitat that have wet and dry periods appropriate for the incubation, maturation, and reproduction of Riverside fairy shrimp in all but the driest of years, such that the pools:

(A) Are inundated (pond) approximately 2 to 8 months during winter and spring, typically filled by rain, surface and subsurface flow;

(B) Generally dry down in the late spring to summer months;

(C) May not pond every year; and

(D) Provide the suitable water chemistry characteristics to support Riverside fairy shrimp. These characteristics include physiochemical factors such as alkalinity, pH, temperature, dissolved solutes,

dissolved oxygen, which can vary depending on the amount of recent precipitation, evaporation, or oxygen saturation; time of day; season; and type and depth of soil and subsurface layers. Vernal pool habitat typically exhibits a range of conditions but remains within the physiological tolerance of the species. The general ranges of conditions include but are not limited to:

(1) Dilute, freshwater pools with low levels of total dissolved solids (low ion levels (sodium ion concentrations generally below 70 mmol/l);

(2) Low alkalinity levels (lower than 80 to 1,000 milligrams per liter (mg/l)), and

(3) A range of pH levels from neutral to alkaline (typically in range of 6.4–7.1).

(ii) Intermixed wetland and upland habitats that function as the local watershed, including topographic features characterized by mounds, swales, and low-lying depressions within a matrix of upland habitat that result in intermittently flowing surface and subsurface water in swales, drainages, and pools described in paragraph (h)(2)(i) of this entry. Associated watersheds provide water to fill the vernal or ephemeral pools in the winter and spring months. Associated watersheds vary in size and therefore cannot be generalized, and they are affected by factors including surface and underground hydrology, the topography of the area surrounding the pool or pools, the vegetative coverage, and the soil substrates in the area. Size of associated watershed likely varies from a few acres to greater than 100 ac (40 ha).

(iii) Soils that support ponding during winter and spring which are found in areas characterized in paragraphs (h)(2)(i) and (h)(2)(ii), respectively, of this entry, that have a clay component or other property that creates an impermeable surface or subsurface layer. Soil series with a clay component or an impermeable surface or subsurface layer typically slow percolation, increase water run-off (at least initially), and contribute to the filling and persistence of ponding of ephemeral wetland habitat where Riverside fairy shrimp occur. Soils and soil series known to support vernal pool habitat include, but are not limited to:

(A) The Azule, Calleguas, Cropley, and Linne soils series in Ventura County;

(B) The Alo, Balcom, Bosanko, Calleguas, Cieneba, and Myford soils series in Orange County;

(C) The Cajalco, Claypit, Murrieta, Porterville, Ramona, Traver, and

Willows soils series in Riverside County; and

(D) The Diablo, Huerhuero, Linne, Placentia, Olivenhain, Redding, Salinas, and Stockpen soils series in San Diego County.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other

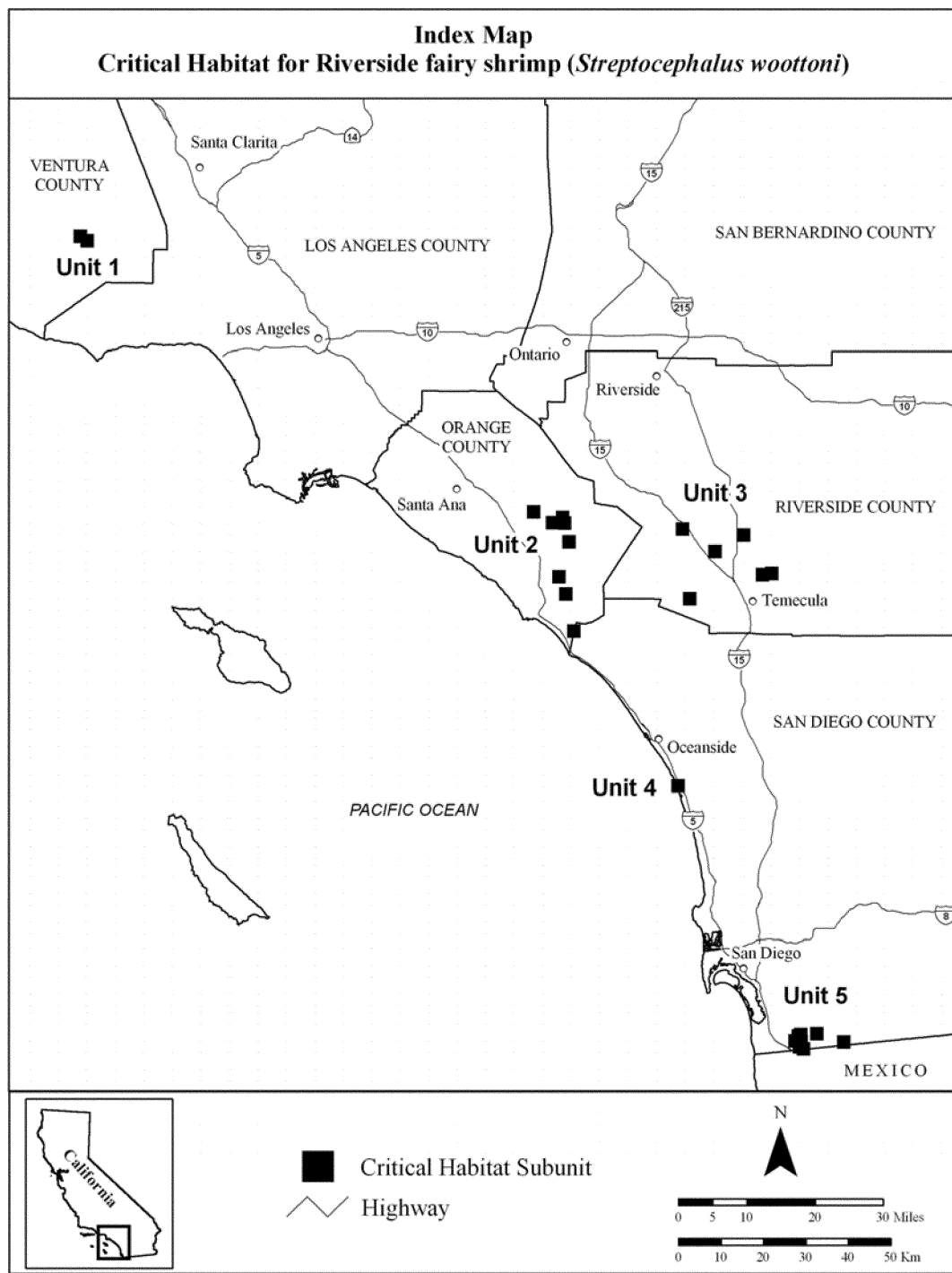
paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) *Critical habitat map units.* Data layers defining map units were created using a base of U.S. Geological Survey 7.5' quadrangle maps. Unit descriptions

were then mapped using Universal Transverse Mercator (UTM) zone 11, North American Datum (NAD) 1983 coordinates.

(5) **Note:** Index map of critical habitat units for the Riverside fairy shrimp (*Streptocephalus woottoni*) follows:

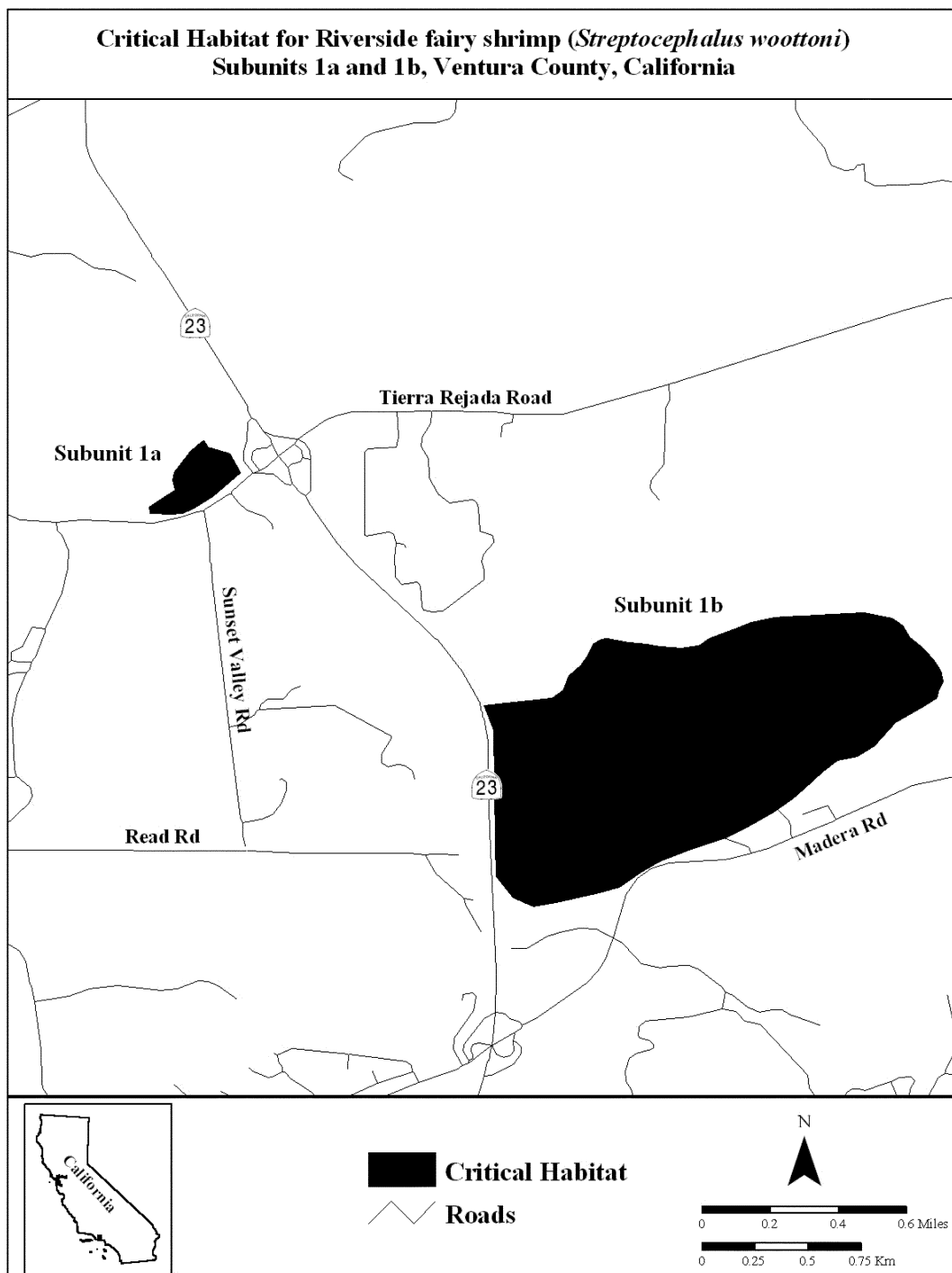
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(6) Unit 1: Ventura County, California.
 (i) Subunit 1a: Tierra Rejada Preserve.
 [Reserved for textual description of
 subunit.]

(ii) Subunit 1b: South of Tierra Rejada
 Valley. [Reserved for textual description
 of subunit.]

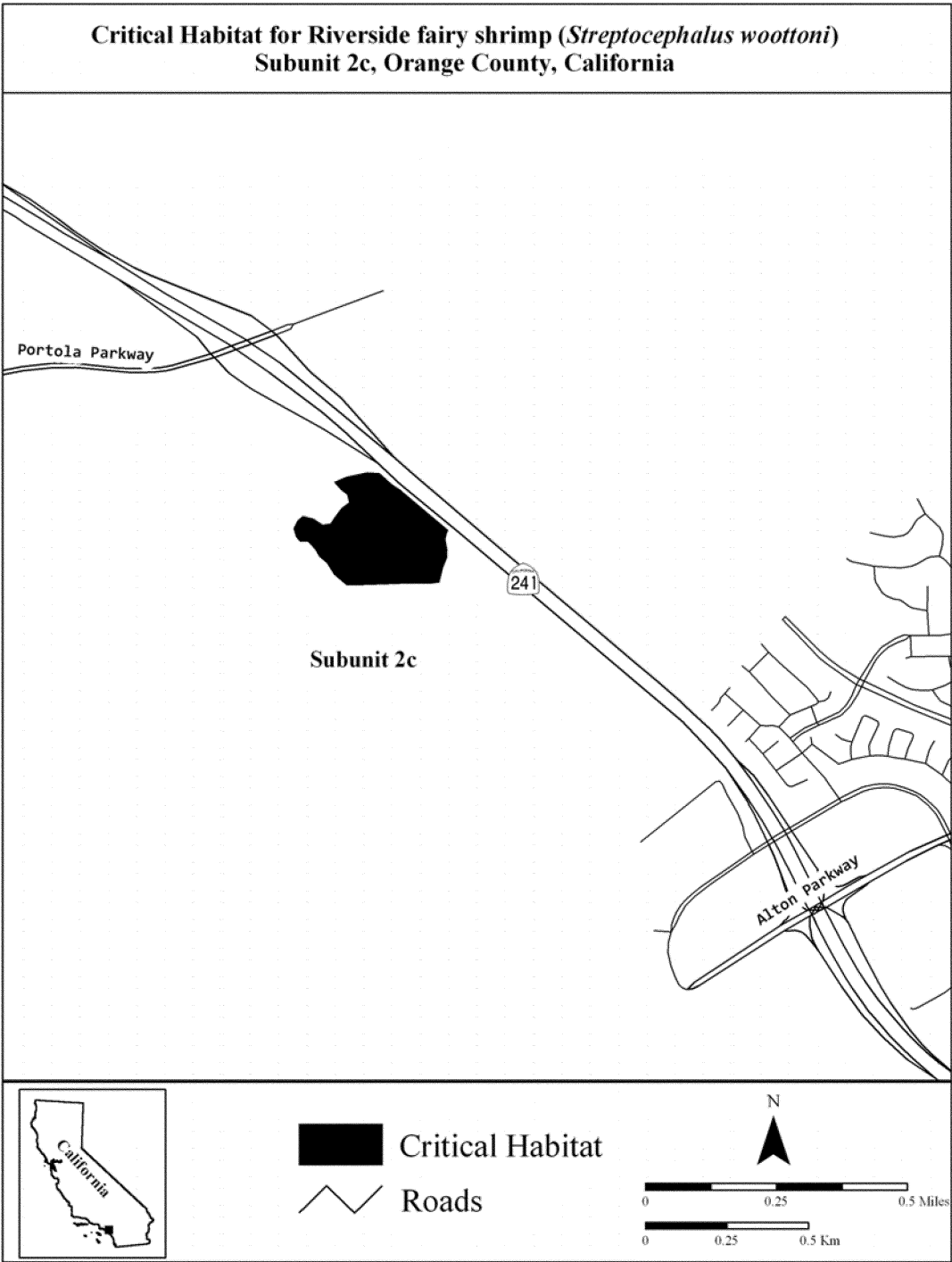
(iii) Map of Unit 1, subunits 1a and
 1b, follows:



(7) Unit 2: Los Angeles Basin-Orange
 County Foothills—Orange County,
 California.

(i) Subunit 2c: (MCAS) El Toro.
 (A) [Reserved for textual description
 of subunit.]

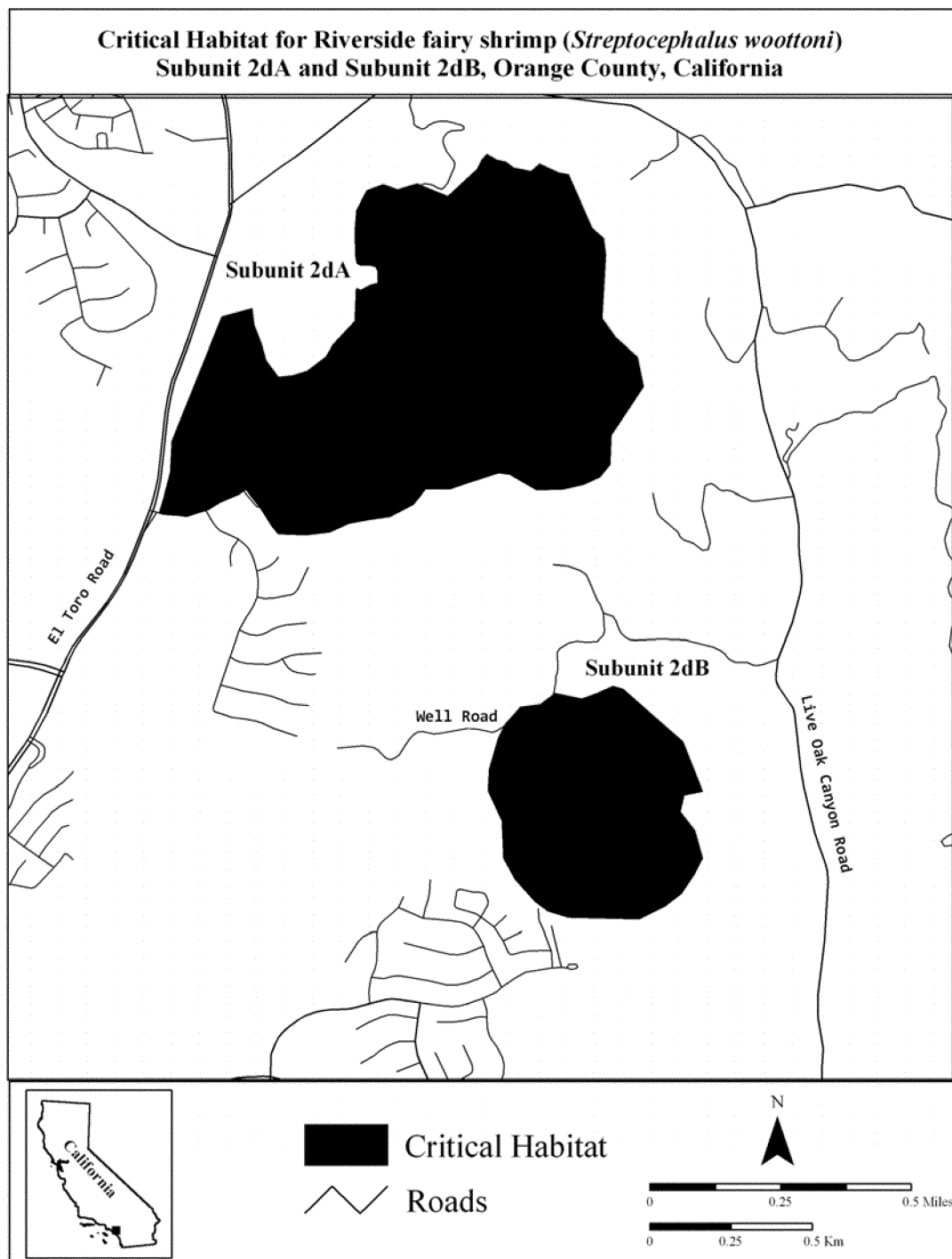
(B) Map of Subunit 2c, (MCAS) El
 Toro, follows:



(ii) Subunit 2dA: Saddleback Meadows.
(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 2dA, Saddleback Meadows, and subunit 2dB, O'Neill

Regional Park—near Trabuco Canyon, follows:



(iii) Subunit 2dB: O'Neill Regional park—near Trabuco Canyon.

(A) [Reserved for textual description of subunit.]

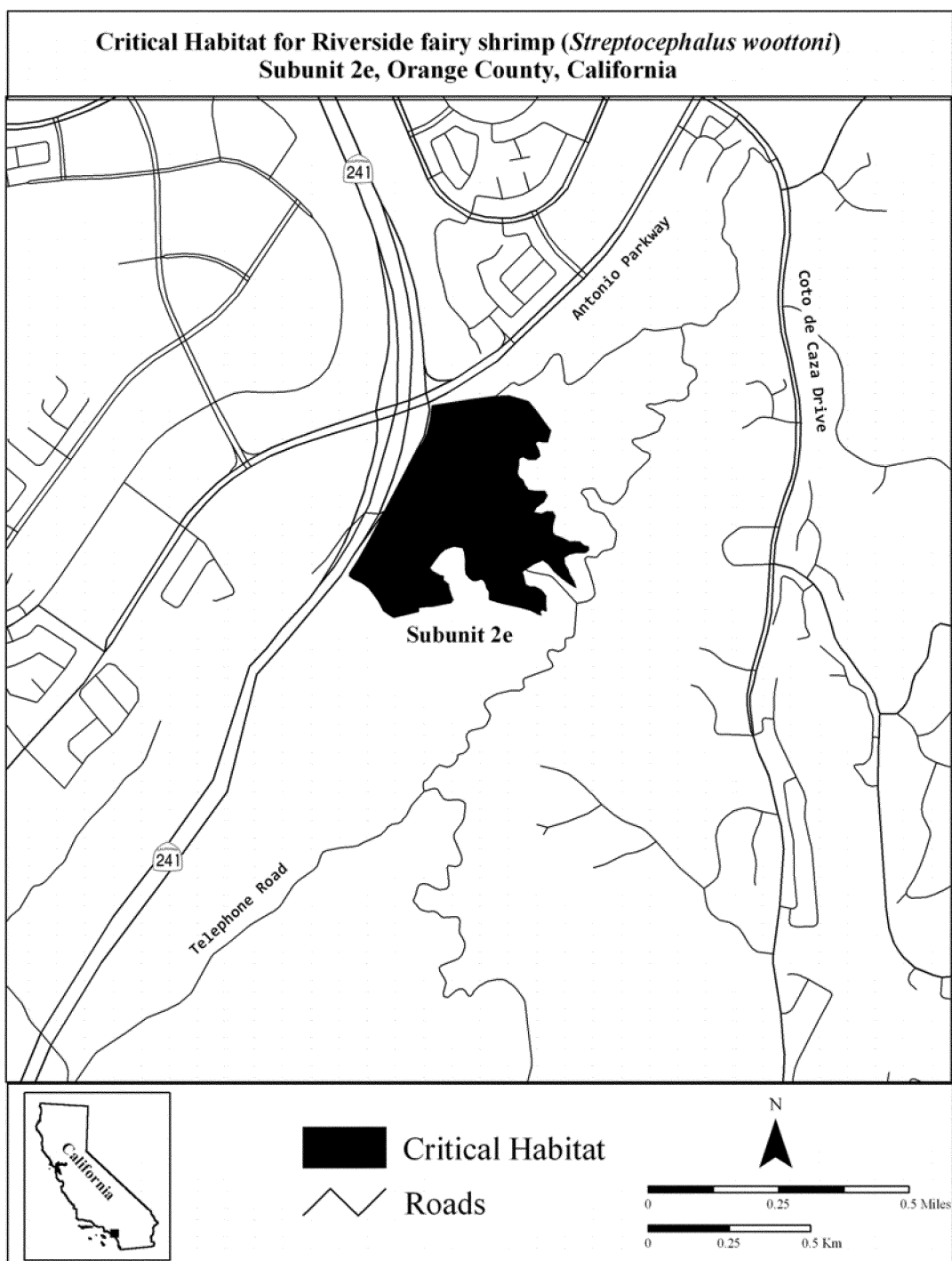
(B) Map of Subunit 2dB, O'Neill Regional Park—near Trabuco Canyon, is

provided at paragraph (h)(7)(ii)(b) of this entry.

(iv) Subunit 2e: O'Neill Regional Park—near Cañada Gobernadora.

(A) [Reserved for textual description of subunit.]

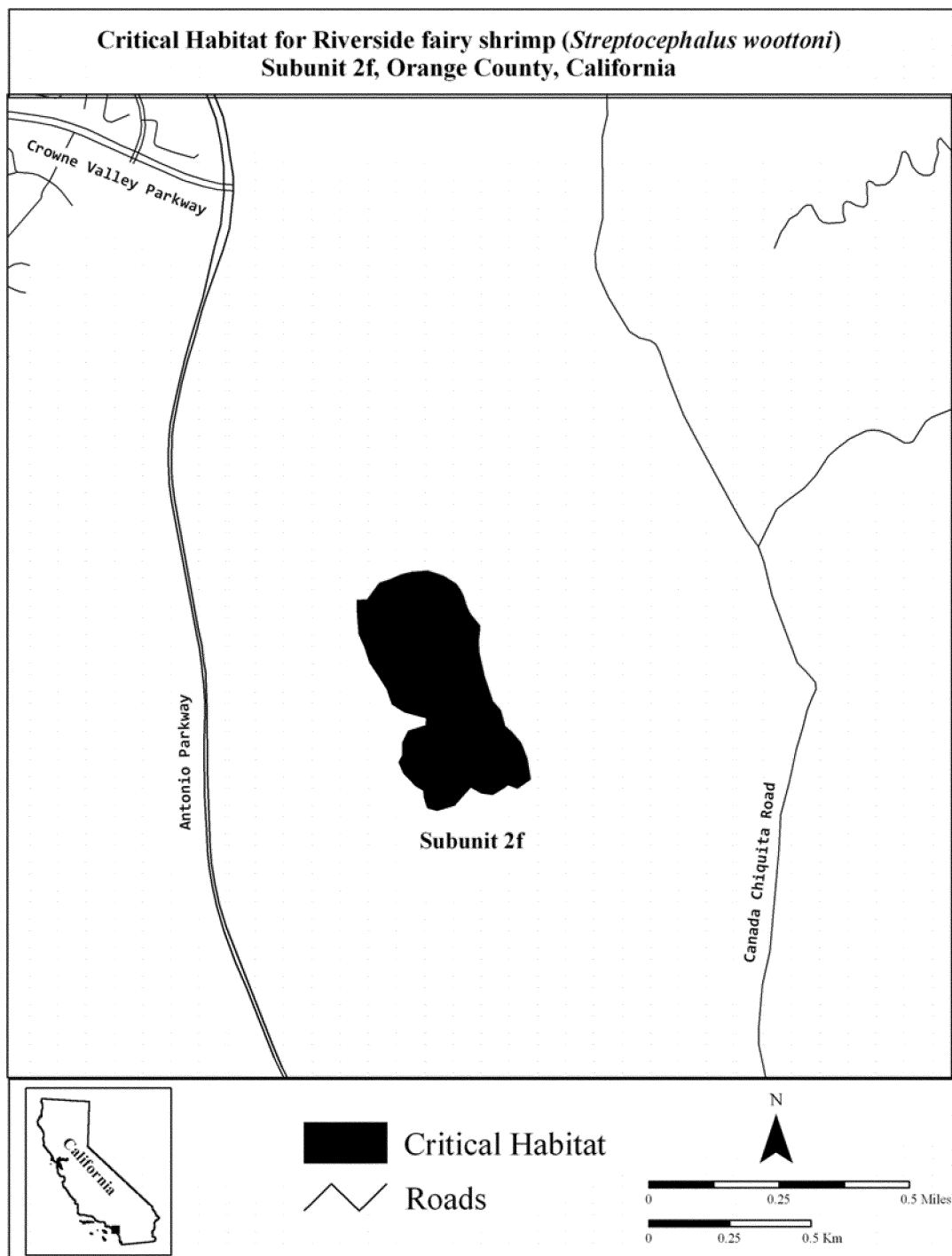
(B) Map of Subunit 2e, O'Neill Regional Park—near Cañada Gobernadora, follows:



(v) Subunit 2f: Chiquita Ridge.

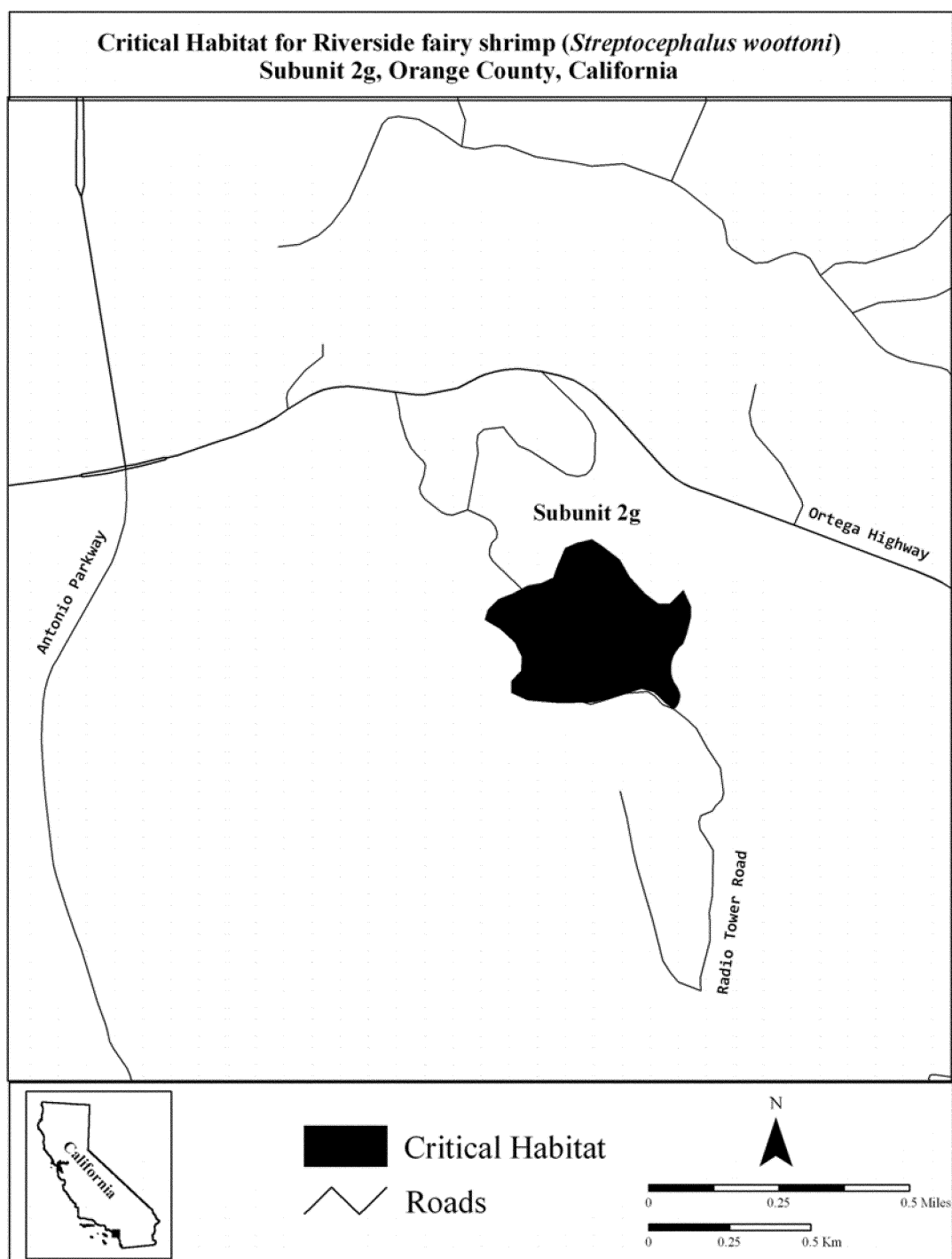
(A) [Reserved for textual description of subunit.]

(B) **Note:** Map of Subunit 2f, Chiquita Ridge, follows:



(vi) Subunit 2g: Radio Tower Road.
(A) [Reserved for textual description
of subunit.]

(B) Map of Subunit 2g, Radio Tower
Road, follows:

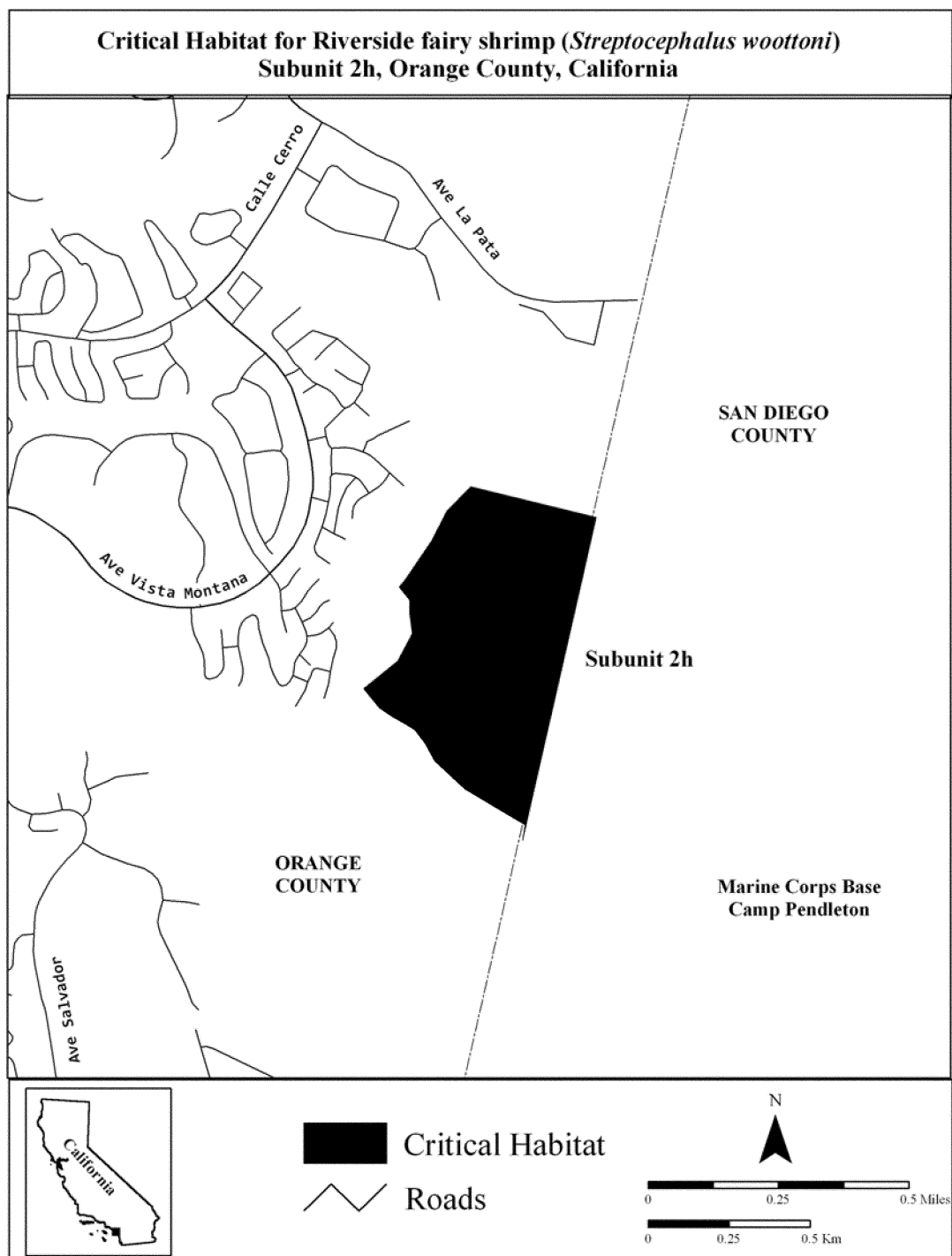


(vii) Subunit 2h: San Onofre State Beach, State Park-leased land (near Christianitos Creek foothills).

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 2h, San Onofre State Beach, State Park-leased land (near

Christianitos Creek foothills)—near Camp Pendleton, follows:



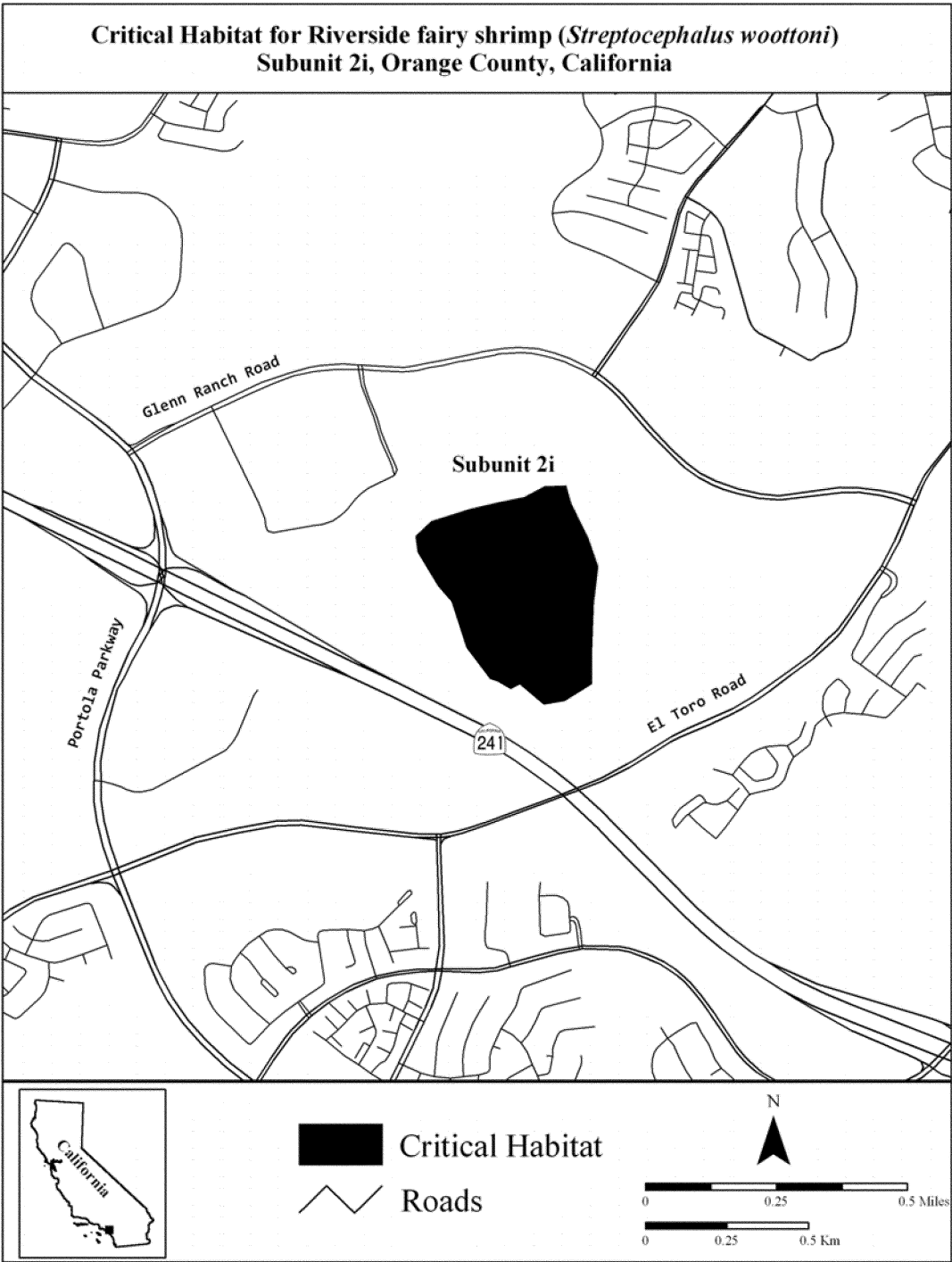
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(viii) Subunit 2i: SCE Viejo Conservation Bank.

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 2i, SCE Viejo Conservation Bank, follows:

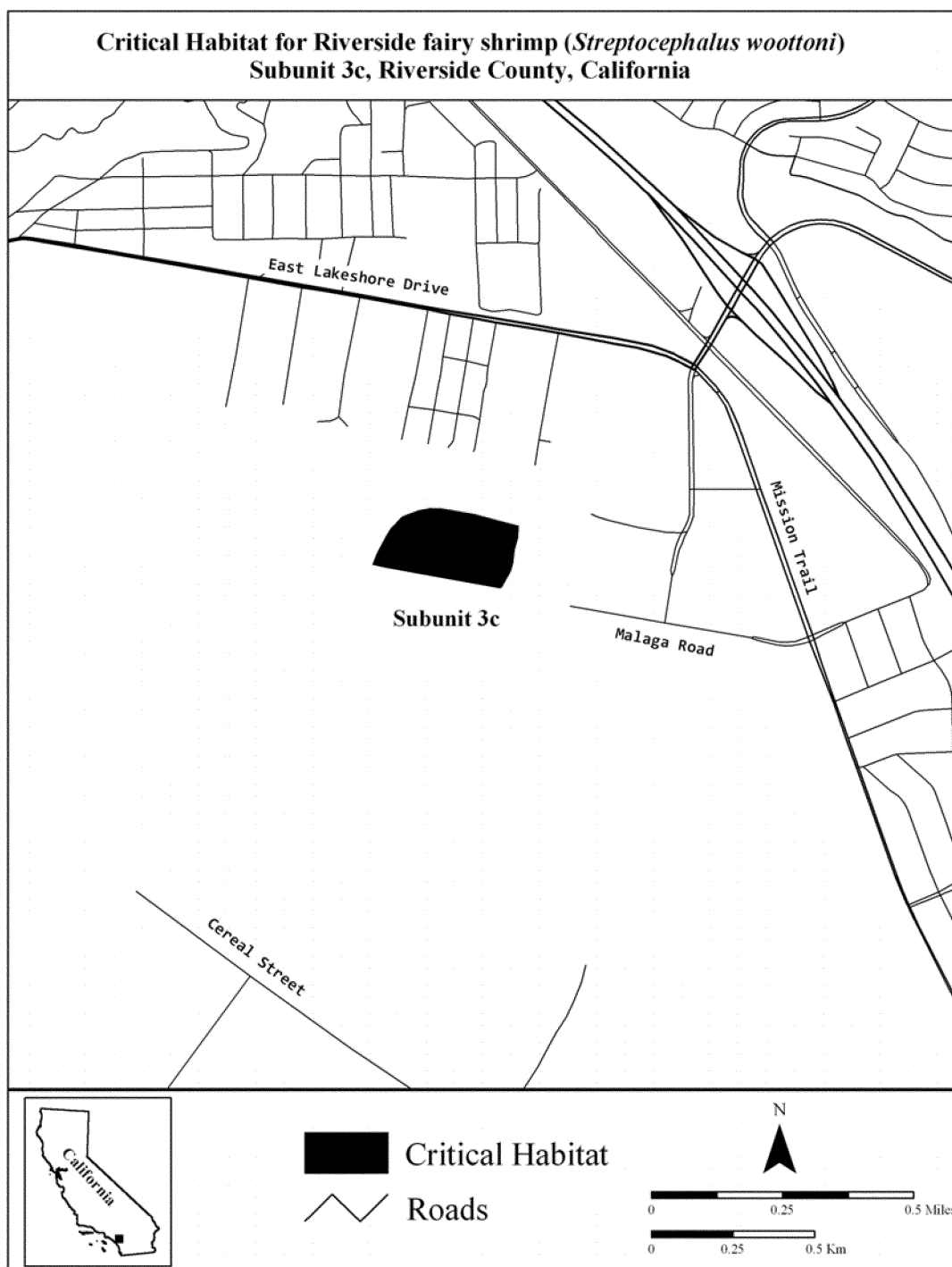
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(8) Unit 3: Riverside Inland Valleys—
Riverside County, California.
(i) Subunit 3c: Australia Pool.

(A) [Reserved for textual description
of subunit.]

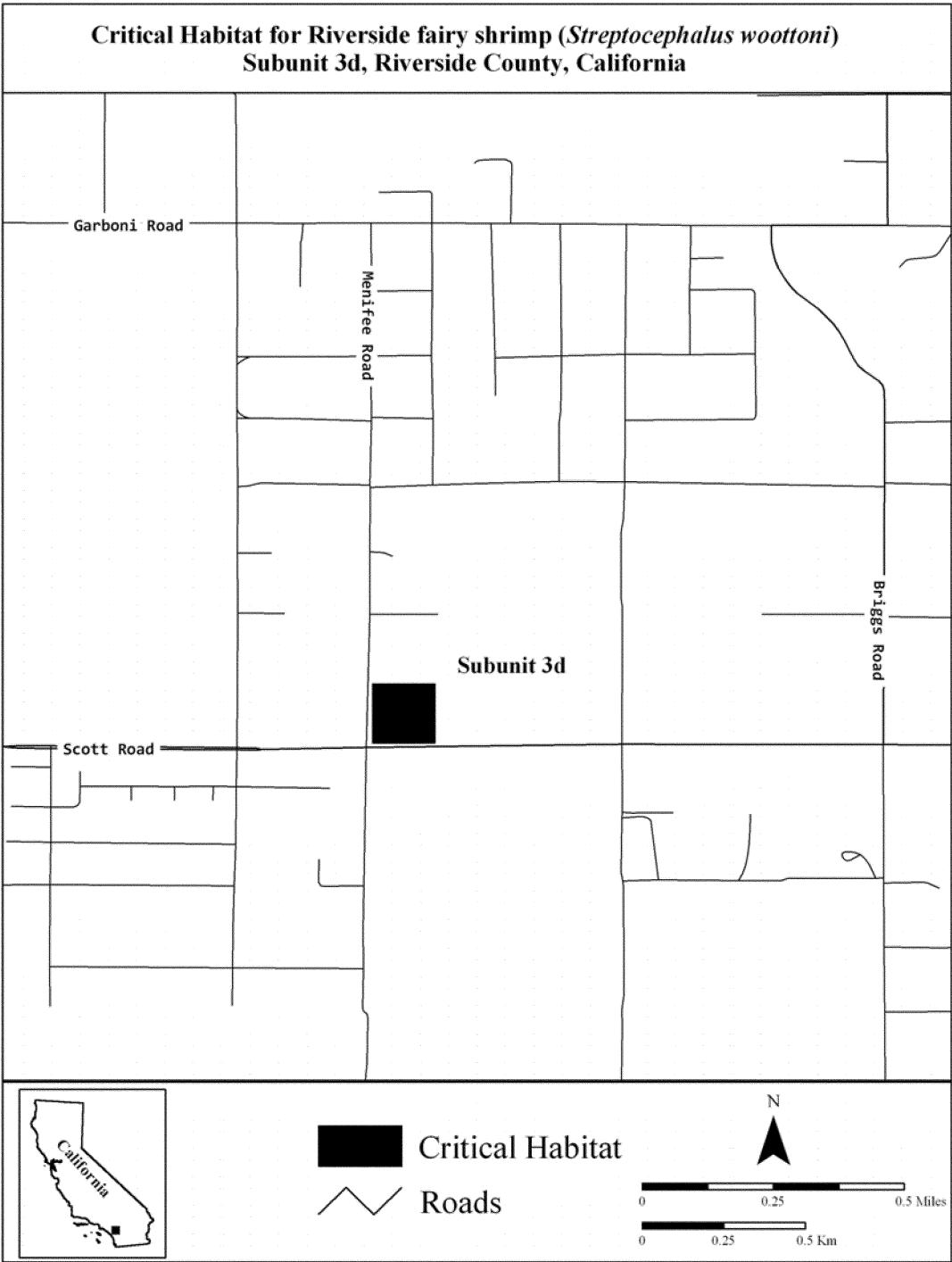
(B) Map of Subunit 3c, Australia Pool,
follows:



(ii) Subunit 3d: Scott Road Pool.

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 3d, Scott Road Pool, follows:



(iii) Subunit 3e: Schleuniger Pool.
(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 3e, Schleuniger Pool, follows:

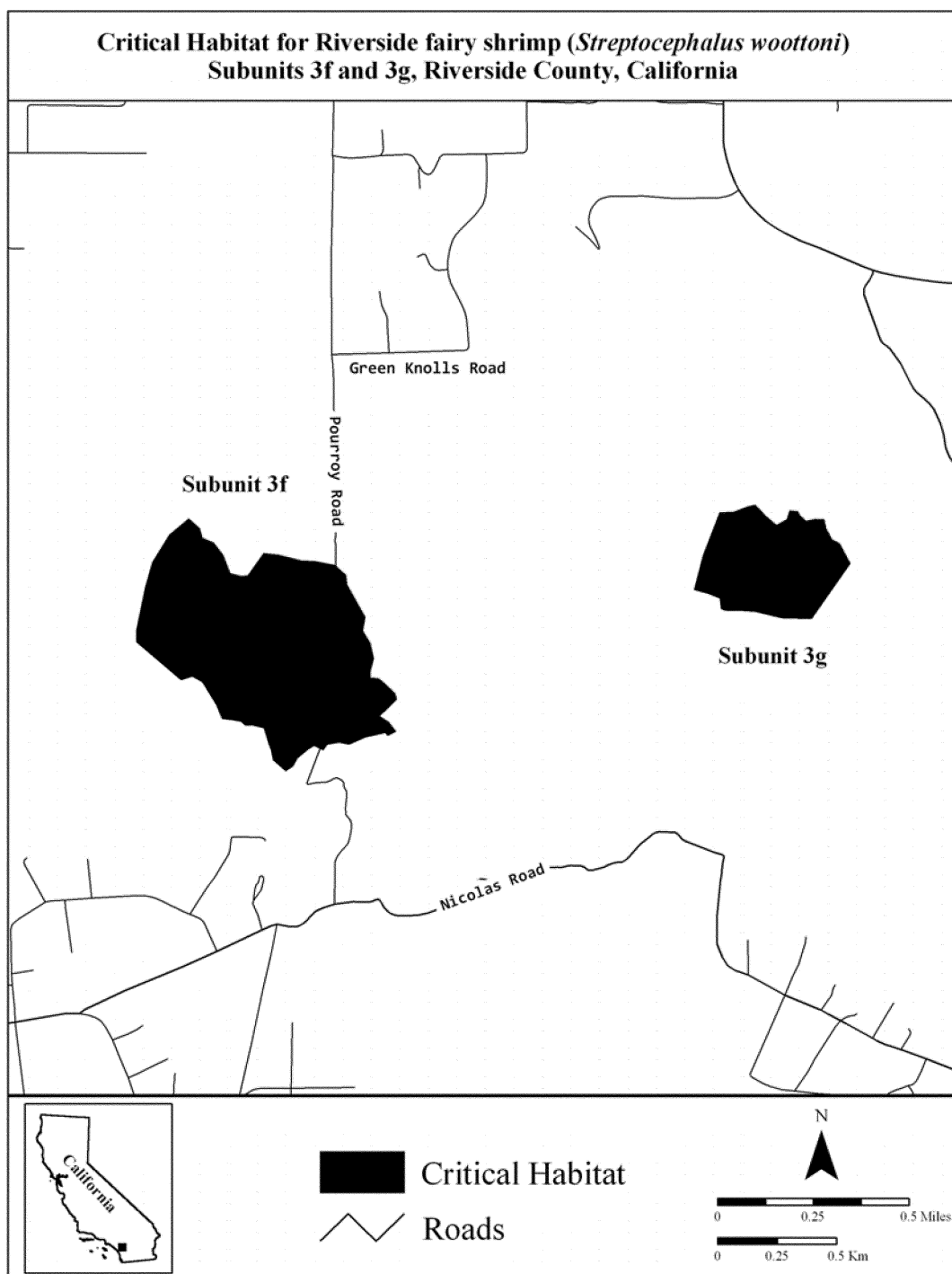


(iv) Subunit 3f: Skunk Hollow and Field Pool (Barry Jones Wetland Mitigation Bank).

(A) [Reserved for textual description subunit.]

(B) Map of Subunit 3f, Skunk Hollow and Field Pool, and Subunit 3g, Johnson Ranch Created Pools follows:

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(v) Subunit 3g: Johnson Ranch Created Pools.

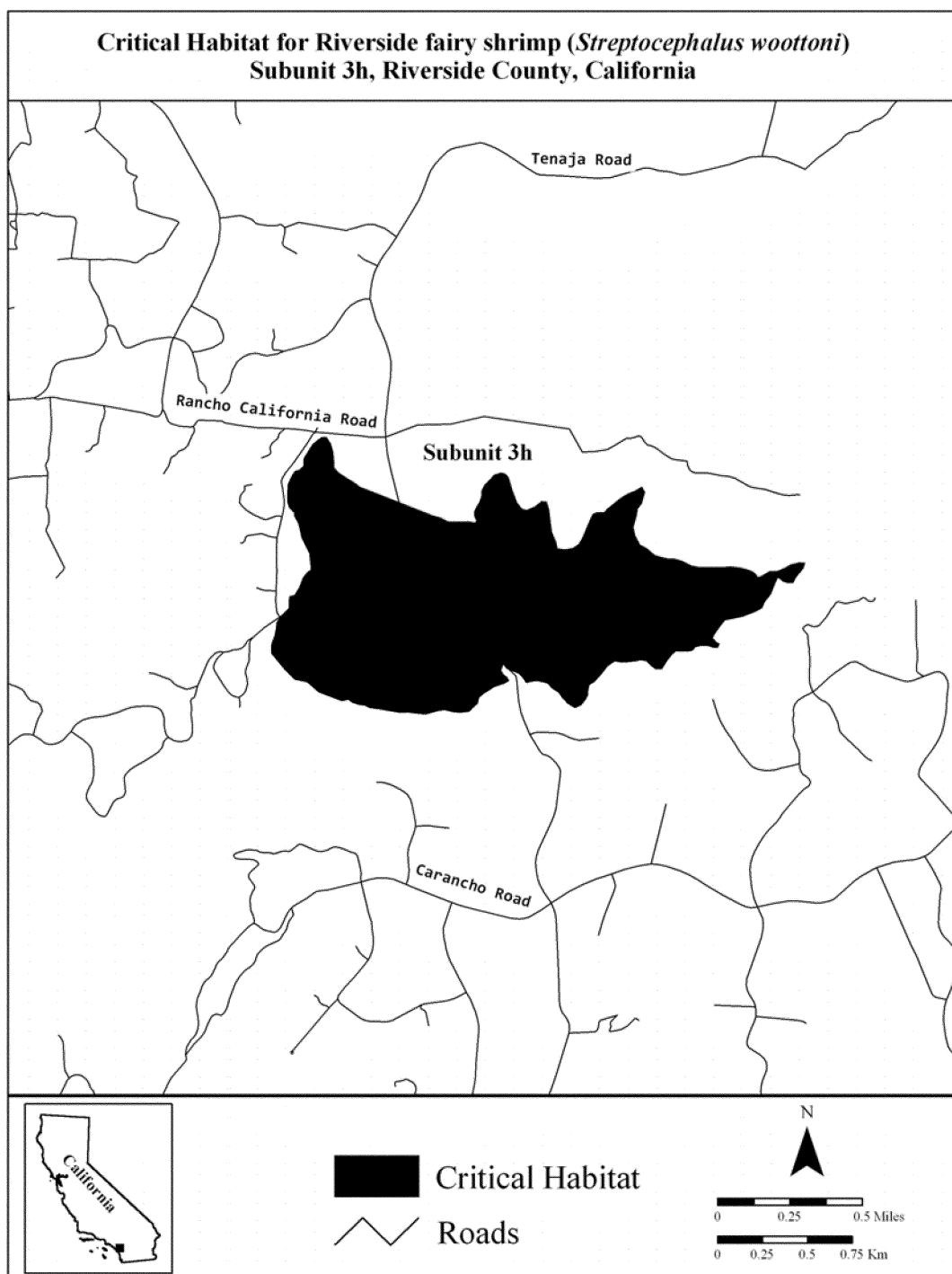
(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 3g, Johnson Ranch Created Pools, is provided at paragraph (h)(8)(iv)(B) of this entry.

(vi) Subunit 3h: Santa Rosa Plateau—Mesa de Colorado.

(A) [Reserved for textual description of subunit.]

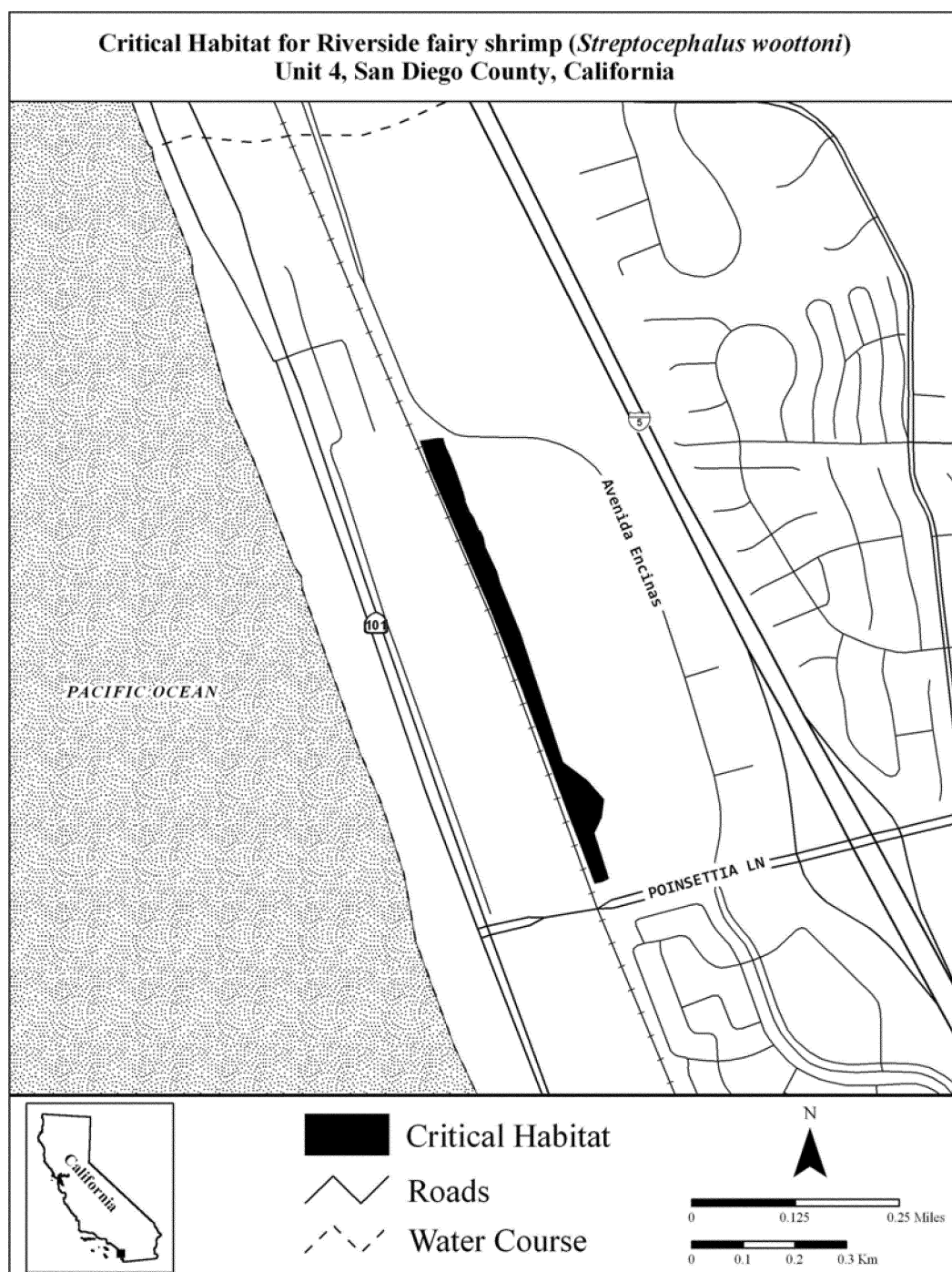
(B) Map of Subunit 3h, Santa Rosa Plateau—Mesa de Colorado, follows:



(9) Unit 4: San Diego North and Central Coastal Mesas—San Diego County, California.

(i) Poinsettia Lane Commuter Train Station (JJ2). [Reserved for textual description of unit.]

(ii) Map of Unit 4, Poinsettia Lane Commuter Train Station—JJ2, follows:

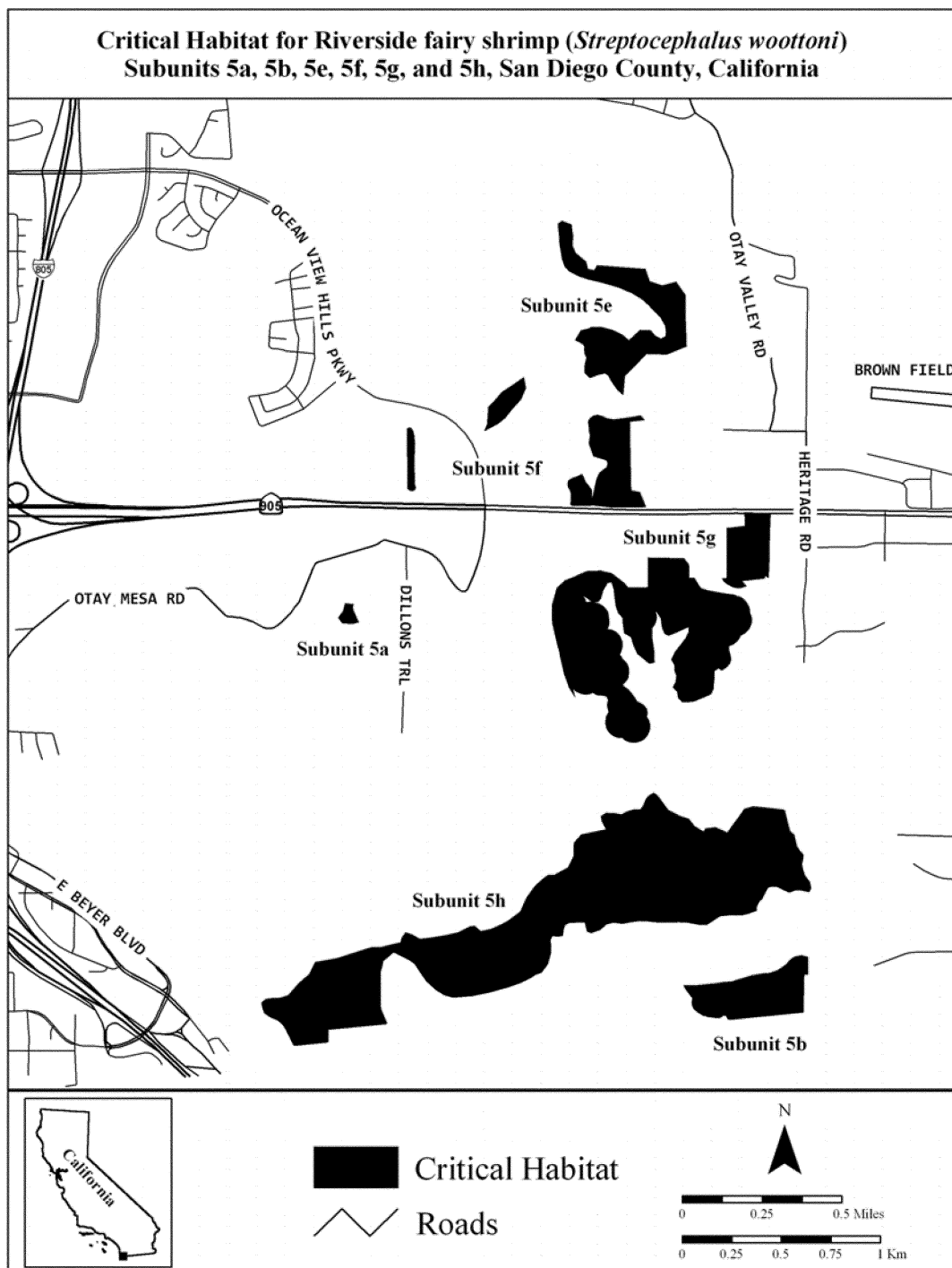


(10) Unit 5: San Diego Southern Coastal Mesas—San Diego County,

California. (i) Subunit 5a: Sweetwater (J33).

(A) [Reserved for textual description of subunit.]

(B) Map of Subunits 5a, 5b, 5e, 5f, 5g, and 5h follows:



(ii) Subunit 5b: Arnie's Point (J15).

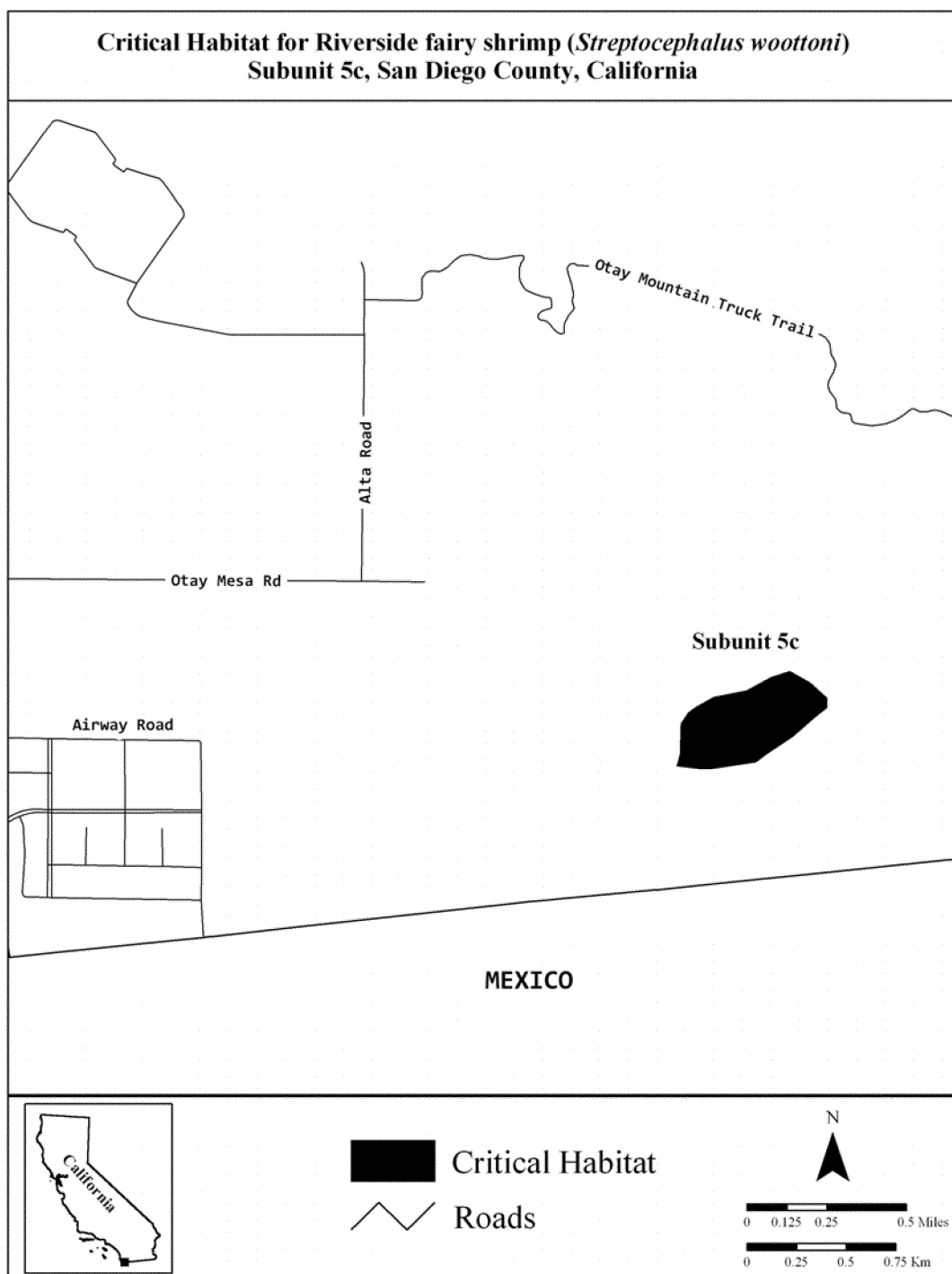
(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5b, Arnie's Point—J15, is provided at paragraph (h)(10)(i)(B) of this entry.

(iii) Subunit 5c: East Otay Mesa.

(A) [Reserved for textual description of subunit.]

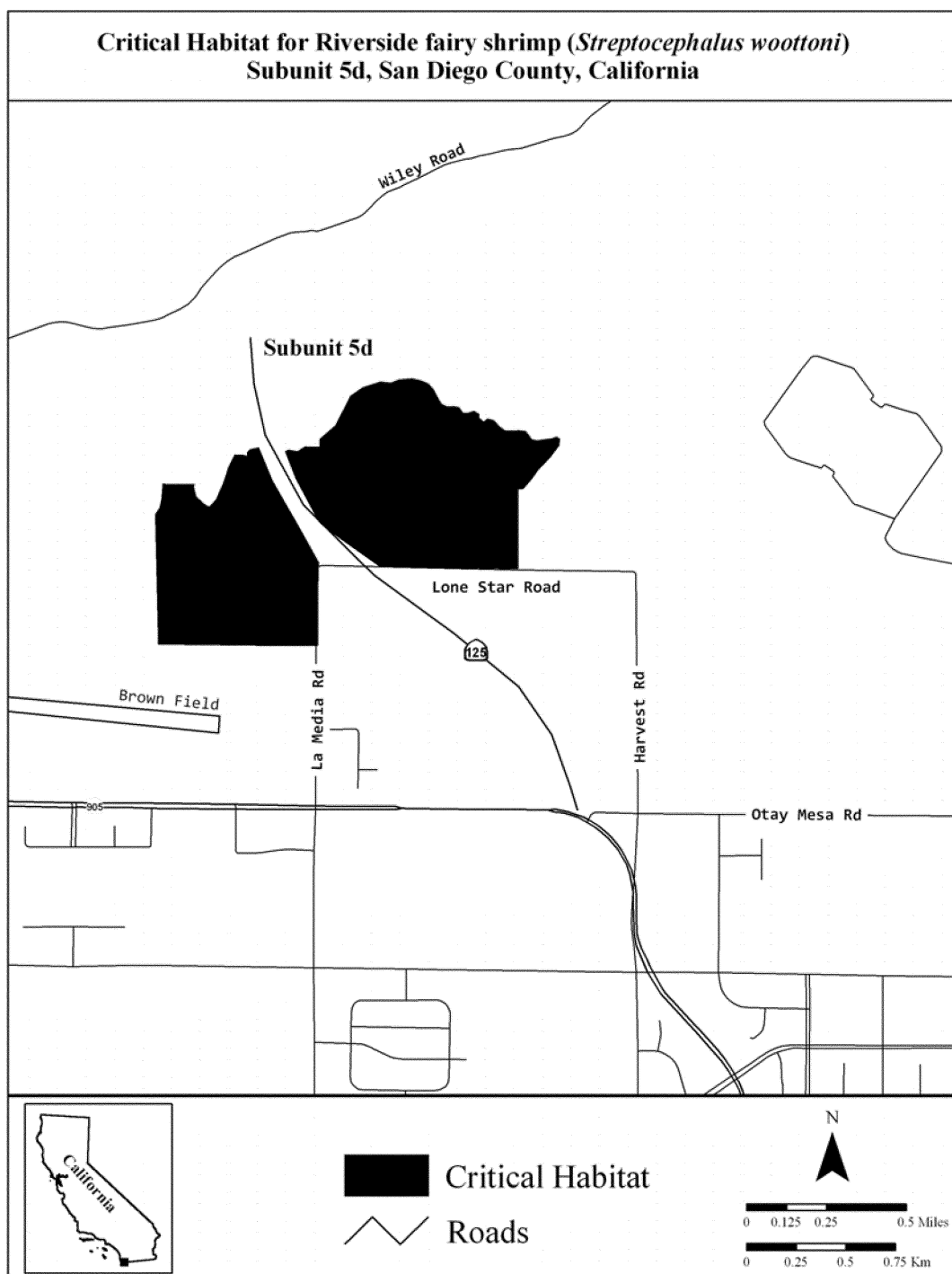
(B) Map of Subunit 5c, East Otay Mesa, follows:



(iv) Subunit 5d: J29–31.

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5d, J29–31, follows:



(v) Subunit 5e: J2 N, J4, J5 (Robinhood Ridge).

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5e, J2 N, J4, J5 (Robinhood Ridge), is provided at paragraph (h)(10)(i)(B) of this entry.

(vi) Subunit 5f: J2 W and J2 S (Hidden Trails, Cal Terraces, and Otay Mesa Road).

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5f, J2 W, and J2 S—Hidden Trails, Cal Terraces, and Otay Mesa Road, is provided at paragraph (h)(10)(i)(B) of this entry.

(vii) Subunit 5g: J14.

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5g, J14, is provided at paragraph (h)(10)(i)(B) of this entry.

(viii) Subunit 5h: (J11 E, J11 W, J12, J16–18 (Goat Mesa)).

(A) [Reserved for textual description of subunit.]

(B) Map of Subunit 5h, J11 E, J11 W, J12, J16–18 (Goat Mesa), is provided at paragraph (h)(10)(i)(B) of this entry.

* * * * *

Dated: May 19, 2011.

Eileen Sobeck,
Acting Assistant Secretary for Fish Wildlife and Parks.

[FR Doc. 2011–12947 Filed 5–31–11; 8:45 am]

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