



# Federal Register

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**Tuesday,  
April 12, 2005**

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## **Part II**

# **Department of the Interior**

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**Fish and Wildlife Service**

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**50 CFR Part 17**

**Endangered and Threatened Wildlife and  
Plants; Designation of Critical Habitat for  
the Riverside Fairy Shrimp  
(*Streptocephalus woottoni*); Final Rule**

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

RIN 1018—AT45

**Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Riverside Fairy Shrimp (*Streptocephalus woottoni*)****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) pursuant to the Endangered Species Act of 1973, as amended (Act). The critical habitat designation encompasses approximately 306 acres (ac) (124 hectares (ha)) of land within Ventura, Orange, and San Diego counties, California.

**DATES:** This rule becomes effective on May 12, 2005.

**ADDRESSES:** Comments and materials received, as well as supporting documentation used in the preparation of this final rule, are available for public inspection, by appointment, during normal business hours, at the Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Carlsbad, California 92009 (telephone 760/431-9440). The final rule, economic analysis, and maps of the designation are also available via the Internet at <http://carlsbad.fws.gov>.

**FOR FURTHER INFORMATION CONTACT:** Jim Bartel, Field Supervisor, Carlsbad Fish and Wildlife Office, at the above address (telephone 760/431-9440; facsimile 760/431-9618).

**SUPPLEMENTARY INFORMATION:****Designation of Critical Habitat Provides Little Additional Protection to Species**

In 30 years of implementing the Act, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of available conservation resources. The Service's present system for designating critical habitat has evolved since its original statutory prescription into a process that provides little real conservation benefit, is driven by litigation and the courts rather than biology, limits our ability to fully evaluate the science involved, consumes enormous agency resources, and imposes huge social and economic costs. The Service believes that

additional agency discretion would allow our focus to return to those actions that provide the greatest benefit to the species most in need of protection.

*Role of Critical Habitat in Actual Practice of Administering and Implementing the Act*

While attention to and protection of habitat are paramount to successful conservation actions, we have consistently found that, in most circumstances, the designation of critical habitat is of little additional value for most listed species, yet it consumes large amounts of conservation resources. Sidle (1987) stated, "Because the Act can protect species with and without critical habitat designation, critical habitat designation may be redundant to the other consultation requirements of section 7." Currently, of the 1,253 listed species in the U.S. under the jurisdiction of the Service, only 470 species (38 percent) have designated critical habitat.

We address the habitat needs of all 1,244 listed species through conservation mechanisms such as listing, section 7 consultations, the section 4 recovery planning process, the section 9 protective prohibitions of unauthorized take, section 6 funding to the States, and the section 10 incidental take permit process. The Service believes that it is these measures that may make the difference between extinction and survival for many species.

We note, however, that the recent 9th Circuit judicial opinion in the case of *Gifford Pinchot Task Force v. United States Fish and Wildlife Service* has invalidated the Service's regulation defining destruction or adverse modification of critical habitat. We are currently reviewing the decision to determine what effect it may have on the outcome of consultations pursuant to section 7 of the Act.

*Procedural and Resource Difficulties in Designating Critical Habitat*

We have been inundated with lawsuits for our failure to designate critical habitat, and we face a growing number of lawsuits challenging critical habitat determinations once they are made. These lawsuits have subjected the Service to an ever-increasing series of court orders and court-approved settlement agreements, compliance with which now consumes nearly the entire listing program budget. This leaves the Service with little ability to prioritize its activities to direct scarce listing resources to the listing program actions

with the most biologically urgent species conservation needs.

The consequence of the critical habitat litigation activity is that limited listing funds are used to defend active lawsuits, to respond to Notices of Intent (NOIs) to sue relative to critical habitat, and to comply with the growing number of adverse court orders. As a result, listing petition responses, the Service's own proposals to list critically imperiled species and final listing determinations on existing proposals are all significantly delayed.

The accelerated schedules of court ordered designations have left the Service with almost no ability to provide for adequate public participation or to ensure a defect-free rulemaking process before making decisions on listing and critical habitat proposals due to the risks associated with noncompliance with judicially-imposed deadlines. This in turn fosters a second round of litigation in which those who fear adverse impacts from critical habitat designations challenge those designations. The cycle of litigation appears endless, is very expensive, and in the final analysis provides relatively little additional protection to listed species.

The costs resulting from the designation include legal costs, the cost of preparation and publication of the designation, the analysis of the economic effects and the cost of requesting and responding to public comment, and in some cases the costs of compliance with the National Environmental Policy Act (NEPA). None of these costs result in any benefit to the species that is not already afforded by the protections of the Act enumerated earlier, and they directly reduce the funds available for direct and tangible conservation actions.

**Background**

Among the rarest animal species endemic (native) to Southern California is a tiny freshwater crustacean known as the Riverside fairy shrimp (*Streptocephalus woottoni*). Its distribution is highly restricted, with most of the known populations of the endangered Riverside fairy shrimp observed in vernal pools located in portions of a few counties and 50 miles (mi) (24 kilometers (km)) or less from the California coast, and ranging only approximately 125 mi (200 km) from its known northern limit (Ventura and Los Angeles counties) to its southern limit (Mexico border, San Diego County) within the U.S. (Eng *et al.* 1990; Simovich and Fugate 1992; Eriksen and Belk 1999; Service 2004 (69 FR 23024)). It does not occur in the nearby desert or

mountain areas (Hathaway and Simovich 1996). It is also among the most recently discovered freshwater crustacean species in California, first identified in 1985 as a unique species (Eng *et al.* 1990) in the genus *Streptocephalus* (Baird 1852). With 63 species that occur worldwide (retrieved February 22, 2005, from the Integrated Taxonomic Information System on-line database, <http://www.itis.usda.gov>), *Streptocephalus* is the most species-rich genus within the aquatic crustacean order Anostraca, which comprises over 258 fairy shrimp species and 7 subspecies worldwide, organized into 21 genera (Belk *et al.* 1993). The fairy shrimp (Anostraca) are, except for one other group, the most primitive living crustaceans, or members of the sub-phylum Crustacea (Eriksen and Belk 1999). Among the 23 fairy shrimp (Anostracan) species that are found in California, 8 species are found only in this State, giving California the highest level of endemism for any comparable geographic region in North America (Eng *et al.* 1990), and resulting in the highest number of species occurring in a comparable land area in both North America and worldwide (Eriksen and Belk 1999). Despite this fact, the level of knowledge about many Anastrocans is relatively low due to the relative recentness of their discovery.

The Riverside fairy shrimp and vernal pool crustaceans in general, occupy the first consumer level in the food chain, and thus constitute a cornerstone in the food web. Fairy shrimp form an important food source for an array of aquatic and terrestrial species, from diving beetles, backswimmers (Notonectids), vernal pool tadpole shrimp (*Branchinecta* species), predaceous aquatic insects and their larvae, to waterfowl and shorebirds, and occasionally even for frogs, toads, and tadpoles (Eriksen and Belk 1999). Humans have also been known to consume fairy shrimp; tribes in California have been known to extensively consume dried *Artemia*, and *Tripes* is said to be used as food by some natives in Mexico (Pennak 1989).

The Riverside fairy shrimp, along with numerous sensitive and rare plant species, lives only in vernal pools, vernal ponds, swales, and ephemeral (short-lived) freshwater habitats. A vernal pool (including vernal pond and vernal lake) is defined as an area of shallow depression, usually underlain by some subsurface layer which prohibits drainage into the lower soil profile, thus causing water to collect during the rainy winter season (Holland 1976; Chetham 1976; Weitkamp *et al.* 1996), *i.e.*, the depression is inundated

for portions of the wet season, when temperatures are sufficient for plant growth (Keeley and Zedler 1998). Following a brief waterlogged period during the late wet season or early dry season, a vernal pool will eventually drain and dry out, followed by an extended period of extreme soil-drying conditions (Keeley and Zedler 1998; Rains *et al.* 2005). Swales are defined as shallow drainages that carry water seasonally. Central to the distinctive ecology of vernal pools is that they are vernal, or ephemeral, *i.e.*, occurring only temporarily, during late winter and spring. The water in vernal pools stands sufficiently long to prohibit zonal vegetation growth (Holland 1976), yet not long enough to allow for colonization by fish species. Vernal pool habitat thus forms a unique type of ecosystem, different in character and species composition from the surrounding habitats (Service 2003; 68 FR46684), and being intermediate between marsh (nearly always wet) and most zonal vegetation communities (nearly always dry) (Holland 1976). In California, where extensive areas of vernal pool habitat have developed over long periods, unique species groups have evolved special adaptations to allow them to survive the unusual conditions of vernal pools. Vernal pools are often defined by their unique, often endemic, flora as well (Smith and Verrill 1998).

The Riverside fairy shrimp occupies, and is thus completely dependent upon, vernal pools to survive. A combination of physical and environmental factors allows for the annual formation and maintenance of their vernal pool habitat. Vernal pools form generally where there is a Mediterranean climate, *i.e.*, a wet season during fall and winter, when rainfall exceeds evaporation and fills the pools, followed by a spring and summer dry season, when evaporation exceeds rainfall and the pools dry up. A typical vernal pool season is characterized by an inundation phase, an aquatic phase, a water-logged drying phase, and a dried-out phase (Keeley and Zedler 1998). Thus, the water regime (hydrologic system) is crucial to the formation and functioning of a healthy vernal pool ecosystem. Some pools fill entirely from direct precipitation (Hanes and Stromberg 1998), while others have a substantial watershed, including both surface, subsurface, and groundwater, flowing through the surrounding bedrock and soils that contributes to their water inputs (Rains *et al.* 2005).

Vernal pools can be a variety of shapes and sizes, from less than a square yard (0.8 square meters (m<sup>2</sup>), to

2.5 ac (1 ha) or more. They occur on gently sloping mesas above the primary drainages, or in valleys at the low end of a watershed (Bauder and McMillan 1998). Vernal pools may be fed or connected by low drainage pathways, or swales. The micro-relief of a vernal pool may be complex, and some are dotted with numerous rounded soil mounds (mima) (Scheffer 1947). Their typical patterning, visible from the air, has allowed a number of vernal pools to be mapped throughout California's Central Valley, on a 10–40 ac unit scale (Holland 1998; 2003, Service 2003). The landscape in which they occur is typically grassland, but vernal pools also occur in a variety of other habitat types (Service 2003).

A critical factor in the development of a vernal pool is the soil conditions of the landscape (an impermeable surface or subsurface layer) and a gently sloping topography (slope of 10 percent or less). Vernal pools form because the soil or sediment layer at or below the surface is nearly or completely impermeable to downward water seepage (Smith and Verrill 1998), and thus rainfall and water from the surrounding watershed becomes trapped above this layer. Soil types of the California vernal pools are volcanic flows, and hardpans and claypans, the latter of which have developed gradually over thousands of years, and can be a yard (1 m) or more thick. The unique assemblage of soils plays a critical role in nutrient cycling in vernal pool ecosystems. The soil types which underlie and surround the vernal pool therefore greatly influence the species composition of both plant and animals, as well as the hydrological functioning of the vernal pool (Hanes and Stromberg 1998; Hobson and Dahlgren 1998; Smith and Verrill 1998). Because water and precipitation flow through the soil to the pool, the chemistry of the soils underlying a vernal pool, and in the surrounding upslope areas, is directly linked to the chemistry of the vernal pool's water, *i.e.*, on its alkalinity, pH, oxidation and reduction processes, dissolved salts and gasses, ion concentrations, mineral richness, and organic material. Thus, soil chemistry likely has a tremendous impact on aquatic invertebrate endemism (cf. Hobson and Dahlgren 1998). The distinct seasonality of vernal pools results in alternating conditions of reduction and oxidation within the soil profile, creating edaphic (soil-influenced) controls that may provide a refuge for competition-sensitive plant and animal species (Hobson and Dahlgren 1998). The length of ponding may also be affected by variables like

consistency of soil, depth of soil to impervious layer (e.g., duripan, claypan), type and thickness of the impervious layer, and local climatic factors (e.g., rainfall abundance and regularity, evaporation rates; Helm 1998).

Because of the transportation of water, soil, minerals and nutrients over the landscape into vernal pools, the upland, or upslope areas associated with vernal pools are an important source of these for vernal pool organisms (Wetzel 1975). Since vernal pools are mostly rain-fed, they tend to have low nutrient levels (Keeley and Zedler 1998). In fact, most of the nutrients that vernal pool crustaceans derive from their vernal pool habitat come from the detritus (decaying organic matter) that washes into pools from the adjacent upslope areas; these nutrients provide the foundation for the food chain in the vernal pool aquatic community (Eriksen and Belk 1999), of which the fairy shrimp fauna constitutes an important component.

Typical to vernal pools are their dramatic fluctuations in local environmental conditions. The water, generally unbuffered, fluctuates greatly on a daily basis in pH, and concentrations of ions and dissolved gasses (oxygen and carbon dioxide), due to varying daily evaporation (Keeley and Zedler 1998). On a larger time-scale, there is extensive monthly and annual variation in the duration and extent of ponding of vernal pools, some pools not filling at all in some years, as the timing and amount of annual rainfall in California varies widely. Because of the unique and ephemeral nature of vernal pool habitat, and the adaptations of its plant and animal species, vernal pools are rich in species composition and contain a large number of highly specialized, native species that are found nowhere else in the region (endemic) (Holland and Jain 1978; Simovich 1998). Vernal pool habitats yield the highest number and species richness of endemics (native species) in comparison to other wetland types (Helm 1998).

#### *Riverside Fairy Shrimp* (*Streptocephalus woottoni*)

The Riverside fairy shrimp is a small (0.56–0.92 inches (in) (14–23 millimeters (mm))), slender Anostracan that has large stalked compound eyes and a delicate, elongate body with 11 pairs of phylloids, or swimming appendages, which also function as gills (Eng *et al.* 1990; Eriksen and Belk 1999). Using their phylloids in a complex, wavelike motion from front to back, they swim gracefully upside-down. As

they swim about, fairy shrimp use these same appendages to filter-feed from the water column, allowing them to non-selectively consume algae, bacteria, protozoa, rotifers and bits of detritus (Eng *et al.* 1990; Eriksen and Belk 1999). Note that nothing is known specifically about the Riverside fairy shrimp's food resource requirements (Simovich and Ripley, pers. comm., May 25, 2004).

Riverside fairy shrimp are distinguished from other fairy shrimp species primarily by the second pair of antennae on the adult male, which are enlarged for grasping the female during copulation (Pennak 1989; Eriksen and Belk 1999; Service 2003). Both males and females are generally off-white in color, with orange pigment in their tail appendages (cercopods) and sometimes along the edges of the phylloids (although some females have been observed to be entirely bright red-orange) (Eriksen and Belk 1999). The females, when mature, can be identified by their brood pouch, the elongate, ventral protruding egg sac immediately behind the phylloids (Eriksen and Belk 1999).

Relative to most other fairy shrimp species, the Riverside fairy shrimp is a rare species with a highly restricted distribution (Hathaway and Simovich 1996). They are found only in a few pools at lower elevations in the Southern California coastal range that are inundated for a longer duration and generally deeper (greater than 12 in or 30 centimeters (cm)) than pools that support San Diego fairy shrimp (*Branchinecta sandiegonensis*) (Hathaway and Simovich 1996). Some of these pools may have been artificially deepened with berms (*i.e.*, cattle tanks and road embankments) (Hathaway and Simovich 1996). The two species are known to co-occur in a few deep pools; however they generally do not co-exist, as adults of the Riverside fairy shrimp emerge later in the season than San Diego fairy shrimp (Simovich and Fugate 1992; Hathaway and Simovich 1996).

After copulation, the males of some fairy shrimp species die within a few hours (Pennak 1989). When the eggs are fertilized in the female's pouch, they become coated (encysted) with a protein layer that develops into a thick, usually multilayered shell (Eriksen and Belk 1999). When the egg enters the late stage of embryonic development, all growth then ceases, and the egg enters into a dormant stage, or diapause (Drinkwater and Clegg 1991; Eriksen and Belk 1999). The female then either ejects the cysts to fall to the pool bottom, or, if she survives for an extended period, continues to move successive clutches

of eggs into her brood pouch. If the vernal pool persists for several weeks to a few months, fairy shrimp may have multiple hatches in a single season (Eriksen and Belk 1999). Cysts can also remain in the brood pouch until the female dies and sinks to the pool bottom (Eriksen and Belk 1999). However, females of some fairy shrimp species can, in the presence of male adults during the wet period, eject thin-shelled cysts that hatch immediately without becoming dormant ("summer eggs"), thus allowing for multiple generations during a single wet season, while the thick-shelled, dormant ("winter") eggs are deposited in the absence of males in the population (Pennak 1989). By the time the pool dries out, the numbers of dormant cysts within each pool basin can reach tens of thousands to millions, depending on pool size, volume, and depth (Belk 1998).

Mature cysts become fully desiccated (dried) after their pool has evaporated, and due to their protective coating, they can withstand extreme environmental conditions (Pennak 1989; Eriksen and Belk 1999). For example, they can survive subjection to physical extremes, such as near-boiling temperatures, months of freezing (Carlisle 1968), fire (Wells *et al.* 1997), or near-vacuum conditions for 10 years without damage to the embryo (Clegg 1967). These adaptations allow fairy shrimp cysts to survive extreme environmental fluctuations, and hatch only when conditions are favorable, after remaining dormant for as much as decades, possibly centuries (Belk 1998). In one closely related fairy shrimp, *Streptocephalus sealii*, cysts were brought to hatch after 25 years of storage in the lab (Belk 1998). Further, because the wall of the cyst can even resist damage by stomach enzymes (Horne 1966), the cyst can pass through the digestive tract of animals without harm, thus allowing for one possible mechanism of cyst dispersal. There are several mechanisms for cyst dispersal, and thus fairy shrimp dispersal, to other habitats. Historically, large-scale flooding from heavy winter and spring rains has been a primary dispersal mechanism, but other major mechanisms include dispersal by migratory birds (*i.e.*, wading birds, shorebirds, waterfowl), ungulates (*i.e.*, cattle, buffalo, deer), and possibly amphibians (*i.e.*, salamanders, frogs) and humans (Eriksen and Belk 1999). These animals either carry cyst-containing mud on their bodies incidentally from pool to pool, or the cysts are ingested and are passed through the gut at another location.

Wind, although less probable, may also be a dispersal agent (Eriksen and Belk 1999).

Although cysts can remain dormant within the pool for decades, they can also hatch about a week after a rain-fill, due to their advanced stage of embryonic development (Pennak 1989; Hathaway and Simovich 1996). However, when a dry vernal pool is once again inundated with water, only a fraction of the dormant cysts in the pool will hatch. Simovich and Hathaway (1997) found that when Riverside fairy shrimp cysts were hydrated once, only 0.18 percent hatched, and after three successive hydration periods, the cumulative total increased to only 2.8 percent. This is among the lowest hatching rates, or prolonged diapause, yet recorded among fairy shrimp species (Simovich and Hathaway 1997). They suggested that the prolonged diapause of so many cysts was an adaptation to the variable nature of local rainfall patterns, as pools at times fill only partially and dry quickly—before the fairy shrimp are able to reach maturity and reproduce. Thus, in such an environment with unpredictable filling events, it benefits the individual to have offspring in prolonged diapause, such that not all hatch after just one hydration (Simovich and Hathaway 1997). In San Diego County, only approximately 28 percent of all filling events recorded over 13 years lasted at least a 17-day period, the minimum length of time needed by the San Diego fairy shrimp to develop to first reproduction (and insufficient time for the Riverside fairy shrimp); this period corresponded to the 28-percent hatching rate for their cysts found in the lab (Philippi 2001). This strategy of prolonged diapause is possibly a risk-spreading (“bet-hedging”) adaptation to the unpredictability of their environment (Simovich and Hathaway 1997; Philippi 2001).

In addition to their low hatching percentage, the cysts of the Riverside fairy shrimp also take longer to hatch after inundation, relative to other species (Hathaway and Simovich 1996). The time from hydration to the hatching of Riverside fairy shrimp cysts took between 12 to 25 days in the lab at varying temperatures, with the most rapid hatching occurring when temperatures were fluctuating at 41–59 degrees Fahrenheit ((F) 5–15 degrees Celsius (C)). San Diego fairy shrimp, in comparison, can hatch after only 3 days (Hathaway and Simovich 1996). The greatest number of Riverside fairy shrimp cysts hatching in the lab, however, was achieved at 50 degrees F (10 degrees C) (Hathaway and Simovich

1996). Their development or maturation rate is also slow, and individuals are relatively long-lived (Hathaway and Simovich 1996), as is typical of obligate deep pool species. The developmental time to maturity for the Riverside fairy shrimp was found to be 7–8 weeks, far longer than to the 7–10 day period of the San Diego fairy shrimp.

It is not surprising, therefore, that the Riverside fairy shrimp also lives much longer (2.5 to over 4 months) than the San Diego fairy shrimp (4–6 weeks) (Hathaway and Simovich 1996). Thus, the minimum period of inundation, or pool duration, that the Riverside fairy shrimp need in order to hatch and reach maturity is 9 to 10 weeks (Gonzalez *et al.* 1996; Hathaway and Simovich 1996). Thus, the association of the Riverside fairy shrimp with large, deep vernal pools that pond continuously for many months may perhaps be explained by its long period of maturity and longevity (cf. Helm 1998). Because of their slow hatch and growth, the Riverside fairy shrimp occur therefore much later in the season than other fairy shrimp species (cf. Hathaway and Simovich 1996).

The vernal pools that Riverside fairy shrimp are found in typically have water with a relatively neutral pH (approximately 7), low to moderate salinity, and low to moderate levels of total dissolved solids (Gonzalez *et al.* 1996; Eriksen and Belk 1999). One laboratory study conducted on the tolerance of Riverside fairy shrimp to variations in water chemistry found that they tolerate an 8-hour exposure to pH levels ranging from 8 to 10.5, with little effect (Gonzalez *et al.* 1996). Generally, in vernal pools where Riverside fairy shrimp occur, the external ion concentrations (Na<sup>+</sup>) averaged 0.73 mmol/l<sup>3</sup> (Gonzalez *et al.* 1996). Although the species was also able to maintain its internal levels of salt concentration fairly constantly over a wide range of external concentrations (0.5–60 mmol/l<sup>3</sup>), it was sensitive to the extremes, with 100-percent mortality occurring at 100 mmol/l<sup>3</sup> (Gonzalez *et al.* 1996). Levels of alkalinity in the vernal pool are affected by the surrounding soil type and hydrological regime of the immediate adjacent upland watershed; in four vernal pools, alkalinity averaged 41 mg/l<sup>3</sup> (Gonzalez *et al.* 1996). In the laboratory, Riverside fairy shrimp were found to tolerate a wide range of alkalinities (0–600 mg/l<sup>3</sup>), but none could survive levels above 800 mg/l<sup>3</sup> (Gonzalez *et al.* 1996). Importantly, studies show that the Riverside fairy shrimp is sensitive to water temperature; with their hatching occurring a longer time after inundation (25 days) and fewer hatching (1–3

percent) at steady higher temperature of 77 degrees F (25 degrees C), than at cooler temperatures (*i.e.*, 7 days hatching time at 59–77 degrees F (15–25 degrees C); over 10 percent hatching at 50 degrees F (10 degrees C) (Gonzalez *et al.* 1996).

The upslope areas surrounding vernal pools are critical to the functioning of the vernal pool and thus to the survival of the Riverside fairy shrimp. The surrounding upslope areas provide the vernal pool with the appropriate annual and season temporality and volume of hydrological flow. With that flow follows the necessary nutrients, salts and minerals from the soil and bedrock that all influence the pool's water volume, the duration of ponding, and the complete chemistry, mineral and nutrient contents of the water itself. Therefore, Riverside fairy shrimp, together with its cohabitating vernal pool flora and fauna, is as dependent upon the upland areas for survival and reproduction as it is upon the pool it occupies.

Urban and water development, flood control, and highway and utility projects, as well as conversion of wild lands to agricultural use, have eliminated or degraded vernal pools and/or their watersheds in southern California (Jones and Stokes Associates 1987). Changes in hydrologic patterns, certain military activities, unauthorized fills, overgrazing, and off-road vehicle use also may imperil this aquatic habitat and the Riverside fairy shrimp. The flora and fauna in vernal pools or swales can change if the hydrologic regime is altered (Bauder 1986). Anthropogenic (human-origin) activities that reduce the extent of the watershed or that alter runoff patterns (*i.e.*, amounts and seasonal distribution of water) may eliminate the Riverside fairy shrimp, reduce population sizes or reproductive success, or shift the location of sites inhabited by this species. The introduction of non-native plant species, competition with invading species, trash dumping, fire, and fire suppression activities were some of the reasons for listing the Riverside fairy shrimp as endangered on August 3, 1993 (58 FR 41384). Because of these threats, we anticipate that intensive long-term monitoring and management will be needed to conserve this species. Historically, vernal pool soils covered approximately 500 km<sup>2</sup> (200 mi<sup>2</sup> of San Diego County (Bauder and McMillan 1998). The greatest recent losses of vernal pool habitat in San Diego County have occurred in Mira Mesa, Rancho Peñasquitos, and Kearny Mesa, which together account for 73 percent of all the pools destroyed in the region during the

7-year period between 1979 and 1986 (Keeler-Wolf *et al.* 1995). Other substantial losses have occurred in the Otay Mesa area, where over 40 percent of the vernal pools were destroyed between 1979 and 1990. Similar to San Diego County, vernal pool habitat was once extensive on the coastal plain of Los Angeles and Orange counties. Unfortunately, there has been a near-total loss of vernal pool habitat in these areas (Ferren and Pritchett 1988; Keeler-Wolf *et al.* 1995; Mattoni and Longcore 1997; Service 1998). Significant losses of vernal pools supporting this species have also occurred in Riverside County.

Adequately quantifying occurrence and distribution of the Riverside fairy shrimp can be difficult due to a number of factors. Firstly, Riverside fairy shrimp are restricted to a narrow geographic region, to certain pool types, and also temporally, as they emerge later in the season than other fairy shrimp species (Hathaway and Simovich 1996). Thus, surveys conducted to also encounter earlier-occurring species may actually miss the Riverside fairy shrimp as they may still be so small (in the juvenile stage) that they pass through the mesh of the collecting nets (Eriksen and Belk 1999). Secondly, surveys may also miss collecting adults simply due to their low hatching percent (as few as 0.18 percent; Simovich and Hathaway 1997), which may result in either a very low population level, or to none being detected in a particular year, when viable cysts are actually present. Further, only males can be identified to the species level with certainty (Eriksen and Belk 1999), and cysts can only be identified to the genus level. To add to the difficulty, vernal pools are generally too small to appear on topographic maps (Holland 1976), not all vernal pools fill each year, or fill long enough for hatching (*i.e.*, discovery) of the Riverside fairy shrimp. Some estimates for San Diego County show that over a period of 13 years, only about 28 percent of the pool-filling events lasted 17 days or longer (Philippi 2001).

For a more detailed discussion about the Riverside fairy shrimp's physical description, ecology, range, status and distribution, and a discussion of factors affecting this species, please refer to the following documents from the **Federal Register**: The final rule listing the species as threatened (58 FR 41384), published on August 3, 1993, the previous final rule to designate critical habitat (66 FR 29384), published on May 30, 2001, and our latest proposed rule to designate critical habitat (69 FR 23024), published on April 27, 2004.

### Previous Federal Actions

For more information on previous Federal actions concerning the Riverside fairy shrimp, please refer to the proposed rule to designate critical habitat for the Riverside fairy shrimp (69 FR 23024) and the notice of availability for the draft economic analysis (DEA) and reopening of the public comment period for the proposed designation of critical habitat for the Riverside fairy shrimp published in the **Federal Register** (October 19, 2004, 69 FR 61461).

### Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the Riverside fairy shrimp in the proposed rule (69 FR 23024). We also contacted and invited the appropriate Federal, State, and local agencies, as well as scientific organizations and other interested parties to comment on the proposed rule. In the notice of availability of the draft economic analysis for the proposed designation of critical habitat (69 FR 61461), we again solicited comments from the public on both the draft economic analysis and the proposed rule. All comments and new information received during the two comment periods were incorporated into the final rule as appropriate.

During the first comment period, open from April 27, 2004, to May 27, 2004, we received 21 letters containing 143 comments directly addressing the proposed critical habitat designation from 6 peer reviewers, 5 Federal agencies, 2 county and local agencies, 1 group, 4 businesses, 1 city, 1 water district, 1 individual, and 1 law firm writing on behalf of 2 groups and 2 transportation agencies.

During the second comment period, open from October 19, 2004, to November 18, 2004, we received 11 letters containing 148 comments directly addressing the proposed critical habitat designation and the draft economic analysis. The letters came from 4 Federal agencies, 3 groups, 2 businesses, 1 law firm on behalf of 2 businesses, and 1 law firm on behalf of 2 groups and 2 transportation agencies.

Of a total 32 letters received, 4 supported the designation of critical habitat for the Riverside fairy shrimp, 2 opposed the designation, 18 letters suggested reducing the area of designation, and 4 letters suggested expanding the area. Two letters were requests for an extension of the comment submission period, but did not express support or opposition to the

proposed critical habitat designation. Comments received were grouped into six general issues specifically relating to the proposed critical habitat designation for the Riverside fairy shrimp, and are addressed in the following summary and incorporated into the final rule as appropriate. We did not receive any requests for a public hearing. We have reviewed all comments received from the peer reviewers and the public for substantive issues and new information regarding critical habitat for the Riverside fairy shrimp, and have incorporated them into the final rule as appropriate. These are addressed below in the following summary.

### Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), to solicit opinions from at least three experts, we solicited the expert opinions of 7 knowledgeable individuals with significant scientific expertise that included familiarity with the Riverside fairy shrimp, the geographic region in which the species occurs, and conservation biology principles. We received responses from six of the peer reviewers. The peer reviewers were generally supportive of the designation of critical habitat, but strongly endorsed the approach that the appropriate management unit was the vernal pool complex (not single pools) together with their immediately surrounding upland watershed. They emphasized the importance of providing conservation protection of pool complexes to ensure the survival of the Riverside fairy shrimp in perpetuity, and of identifying and preserving all remaining populations of Riverside fairy shrimp, including those within conservation-managed areas. Three peer reviewers also gave specific comments on our decision to exclude certain lands from critical habitat based on Habitat Conservation Plans (HCPs) and Integrated Natural Resources Management Plans (INRMPs).

#### Comments From Peer Reviewers

1. *Peer Reviewer Comment*: Most of the reviewers stressed the importance of providing or increasing Federal protection to the Riverside fairy shrimp and their vernal pool habitat, since conservation measures are needed to protect them. Over 95 percent of vernal pools in Southern California have been extirpated (destroyed), and the remaining vernal pools and the species that inhabit them are currently under threat of elimination from both private and public organizations. Additionally, vernal pools are valuable in that they are ecologically unique, while also

providing valuable ecosystem functions. Vernal pool complexes act as hydrologic “sponges,” buffering against drought and flooding. Large-scale alterations or developments within the local watershed of vernal pool complexes would affect the local hydrology dramatically and, from an engineering and public works perspective, can lead to increases in the need for management of unnaturally large amounts of runoff following a rainstorm. Thus, vernal pools have not received adequate recognition in the rule for the benefits (ecological services) they provide. For their long-term survival, vernal pools must be adequately protected; the designation of critical habitat does not seem to provide adequate conservation measures to serve this purpose.

*Our Response:* Section 4 of the Act requires us to designate critical habitat to the maximum extent prudent and determinable, which we have done, based upon the best data available to us at this time. We concur that additional, long-term conservation measures are needed to protect the Riverside fairy shrimp and its habitat, and additional data is needed on locations of their occurrence.

In developing our final designation of critical habitat for the Riverside fairy shrimp, we used the best scientific and commercial data available to identify those areas that contain essential occurrences of Riverside fairy shrimp and/or are defined by the physical and biological features essential to their conservation. We used a number of criteria in defining critical habitat, including but not limited to the known species occurrence (known at the time of listing, as well as discovered subsequently) and distribution data, habitat types, presence of PCE's, degree of habitat fragmentation, soil and landform relationships, connectivity and dispersal factors, and conservation biology principles. We did not include all vernal pool landscapes within the Riverside fairy shrimp's range although surveys in these areas may result in the detection of other occurrences in the future. If significant information becomes available indicating that areas outside of our designation are essential to the conservation of the Riverside fairy shrimp, we can, under the Act, revise critical habitat in the future.

2. *Peer Reviewer Comment:* While the Service's proposed designation of critical habitat for the Riverside fairy shrimp in southern California was supported, reviewers stated it is questionable whether 5,795 acres in the proposed rule is “enough” critical habitat for the conservation of the remaining Riverside fairy shrimp

populations. Firstly, reviewers strongly emphasized the importance of considering the vernal pool complex and the surrounding watershed as the management unit for this species. The unique physiochemical requirements of the Riverside fairy shrimp make it particularly vulnerable to changes in hydrology. Further, other vernal pool species have their own unique ecological requirements in terms of soil, hydrology, etc. Protecting and maintaining entire vernal pool complexes and their surrounding watershed as a functioning unit will benefit the Riverside fairy shrimp and the other endangered species that live in these habitats. If the landscape at a site is changed sufficiently to alter the hydrology of individual vernal pools, then the species in them will eventually go extinct, regardless of whether the pools are disturbed or not. Secondly, some vernal pools excluded from the designation, but set aside for conservation or mitigation, do not have sufficient protection in the surrounding watershed, and thus become ecologically useless. The exclusion of military lands from the final designation is particularly troubling in this regard, because there are no guarantees that the watershed, let alone pools with Riverside fairy shrimp in them, will be adequately protected.

*Our Response:* Firstly, we note the support of our critical habitat designation, and concur with the reviewers on the importance of considering the vernal pool complexes together with their immediately surrounding upslope areas as the management unit (see *Background* and *Primary Constituent Elements* sections below). We have used this approach in our analyses when finalizing our critical habitat designation for the Riverside fairy shrimp, and have, wherever possible, included the upslope areas surrounding the pools. Secondly, for approved, legally operative HCPs that include areas eligible for designation as critical habitat and that specifically address the Riverside fairy shrimp and provide for its long-term conservation, we believe that the benefits of excluding those HCPs will outweigh the benefits of including them. Thirdly, we received requests from three military bases to exclude lands owned or managed by the Department of Defense for military purposes because the designation would increase the costs and regulatory requirements, hamper the military's ability to carry out their national security objectives, or because there is an INRMP in place that provides a benefit to the Riverside fairy shrimp.

These installations have either been excluded from final designated critical habitat pursuant to section 4(b)(2) of the Act, or exempted according to section 4(a)(3) of the Act. Please refer to the sections *Relationship of Critical Habitat to Approved Habitat Conservation Plans* and *Relationship of Critical Habitat to Department of Defense Lands* below in this final rule for detailed discussions of our rationale for exclusions and exemptions.

3. *Peer Reviewer Comment:* Any consideration of whether the Riverside fairy shrimp will persist indefinitely (*i.e.*, avoid extinction due to anthropogenic causes) would require a quantification of the Riverside fairy shrimp's (a) dispersal biology, (b) adaptation to local physiochemical conditions, and (c) adaptation to hydrologic uncertainties (via reliance on an egg bank). In terms of the hydrology of the vernal pool habitat, quantifiable data is needed on (d) the historic environmental variation and (e) the predicted future environmental variation. However, only rudimentary data are available on any of these topics, with the possible exception of (d). Therefore, it would be wise to err on the side of caution and offer maximal protection to all remaining populations of this species.

*Our Response:* We concur that more detailed studies are needed on most aspects of the Riverside fairy shrimp's biology. In this rule, we address the issue of designating critical habitat areas, areas containing the necessary primary constituent elements (PCEs) that are essential to the conservation of the Riverside fairy shrimp. For this purpose, we used the best scientific and commercial information that were available to us and based our analyses upon areas either containing with existing populations of Riverside fairy shrimp or containing features essential for the conservation of the species using the vernal pool complex together with the immediately surrounding upslope areas as our management unit. To assist us in developing this final rule, we also opened two comment periods to obtain as much additional, currently available information as possible.

4. *Peer Reviewer Comment:* One reviewer suggested that the designation of critical habitat is no longer effective as a means to protect the species and its habitat, as funds that are needed to achieve that goal are spent instead on litigation. Rather, a new method is needed to accomplish this goal, such that the Riverside fairy shrimp and its habitat are actually preserved (rather than designated, then litigated).



*Our Response:* We concur that the Service's present system for designating critical habitat has evolved into a process that is often driven by litigation and the courts, and thus consumes enormous agency resources. The Service believes that additional agency discretion would allow our focus to return to those actions that provide the greatest benefit to the species most in need of protection. Pursuant to section 4 of the Act, however, the Secretary shall, to the maximum extent prudent and determinable, designate any habitat which is then considered to be critical habitat for listed endangered or threatened species. Alternative or additional methods for accomplishing more effective conservation of the Riverside fairy shrimp are discussed in the Recovery Plan, Multiple Species Habitat Conservation Plans (MSHCPs), Natural Community Conservation Programs (NCCPs), and other conservation plans. These plans address the survival and recovery of this species, and we expect they will be in a continual process of improvement and increased efficiency with time.

5. *Peer Reviewer Comment:* Several reviewers disagreed with the Service's statement in the rule (see **SUPPLEMENTARY INFORMATION** above) that designation of critical habitat provides little additional protection to species, and believed this should be amended or omitted from the rule, as it is self-contradictory. Although designating critical habitat does not in itself protect any habitat, the biggest advantage of critical habitat designation is the ability to address the "cumulative effects" of many small impacts to the habitat. Impacts to a single location are not likely to drive the species to extinction, but the effects of impacts at many individual locations may, in total, create a substantial risk for species extinction. Designating critical habitat establishes a core, reducing the potential for individual small impacts to be allowed to drive the species to extinction.

*Our Response:* While we concur that critical habitat designation can provide some level of species protection by addressing cumulative effects of numerous impacts to the habitat in certain circumstances, this can only be provided if there is Federal nexus for those agencies planning actions that may impact the designated habitat.

6. *Peer Reviewer Comment:* The Service's statement in the rule, that the exclusion of HCPs offers "unhindered, continued ability to seek new partnerships with future HCP participants" (see *Relationship of Critical Habitat to Approved Habitat Conservation Plans*) should be amended

in the rule as it is illogical and self-contradictory. Not designating critical habitat within HCPs in order to allow seeking new partnerships implies that the new partnerships would be compromised if they were actually forced to protect Riverside fairy shrimp habitat, which should be one goal of any "partnership."

*Our Response:* Both HCPs and critical habitat designations are designed to provide conservation measures to protect the Riverside fairy shrimp. The advantage of seeking new conservation partnerships, through HCPs or other means, is that they can offer active management and other conservation measures for the habitat on a full-time and predictable basis, while a critical habitat designation only prevents adverse modification of the habitat where there is a Federal nexus to the modifying activity, a far lesser level of protection. It is our experience that landowners generally react very negatively to having their property designated as critical habitat, and that this is then a strong disincentive for them to cooperate in conservation of the species in question. HCPs offer conservation of covered species whether or not the area is designated as critical habitat (for details see the section *Relationship of Critical Habitat to Approved Habitat Conservation Plans*).

7. *Peer Reviewer Comment:* The proposed rule appears to find ways to exclude most of the "potential" critical habitat in Riverside and San Diego counties. Except for areas on March Air Reserve Base, the proposed Map Unit 3 for Riverside County excludes all critical habitat, and specifically that on the Santa Rosa Plateau, based on the speculative assertion that the proposed Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) will adequately protect the Riverside fairy shrimp. What is the benefit of excluding critical habitat for the Riverside fairy shrimp on the Santa Rosa Plateau? Any scientifically defensible HCP must protect nearly all of the Santa Rosa Plateau.

*Our Response:* HCPs and their Implementing Agreements include management measures and protections designed to protect, restore, monitor, manage, and enhance the habitat to benefit the conservation of the species covered in the plans. The Western Riverside County MSHCP, which has now been finalized, seeks to accomplish these goals for the Riverside fairy shrimp through the implementation of species-specific conservation objectives.

In our analyses, the benefits of excluding critical habitat areas covered by the Western Riverside County

MSHCP outweigh the benefits of inclusion. Of the conservation measures this plan identifies for the Riverside fairy shrimp, the first objective is to include within its Conservation Area at least five Core Areas of vernal pools (or vernal pool complexes) and their watersheds; these areas contain five known key Riverside fairy shrimp populations. Core Areas include the Santa Rosa Plateau Ecological Reserve (17,188 acres), Skunk Hollow (156 acres), Murrieta (1,292 acres) and Lake Elsinore back basin (3,180 acres). Within the key population areas, approximately 5,868 acres (33 percent) of potential vernal pool and playa habitat and suitable soils habitat land coverages would be located outside the MSHCP Conservation Area. Any Riverside fairy shrimp present within this area would be subject to incidental take under the guidelines implemented as part of this Plan. Each Reserve Manager responsible for a Core Area containing soils identified as supporting the Riverside fairy shrimp (e.g., the Santa Rosa Plateau Ecological Reserve) shall evaluate their Core Area for the presence of historic or vestigial vernal pools. A program to enhance these areas will be undertaken. Within the MSHCP Conservation Area, that pond water seasonally will be identified and monitored for the presence of fairy shrimp. Reserve managers will ensure habitat support functions within the MSHCP Conservation Area by maintaining and/or preserving watersheds of conserved known or future vernal pools or depressions. Particular management emphasis will be given to disking, illegal dumping and maintaining hydrology (MSHCP Final Documents, Vol. 1—The Plan, June 17, 2003). See *Western Riverside County Multiple Species Habitat Conservation Plan* in the section *Relationship of Critical Habitat to Approved Habitat Conservation Plans* below for more details.

8. *Peer Reviewer Comment:* The Service's assumption that the existence of an HCP automatically affords protection to the Riverside fairy shrimp within the covered area is questionable. In the development of the San Diego Multiple Species Conservation Plan (MSCP)/HCP, vernal pools were explicitly excluded from its intended coverage, because at the time, those areas covered by the conservation plans were regulated as wetlands by the Environmental Protection Agency. As San Diego County does not have a good record of enduring protection of vernal pools, it is important, from a scientific and land-management perspective, to



have an explicit analysis of what (if any) Riverside fairy shrimp populations and their habitats are actually covered in the designated protected areas of the HCP, before exclusion of any areas are made.

*Our Response:* Vernal pool habitats that support the Riverside fairy shrimp that were considered essential but excluded from critical habitat were included on our website for public review and comment. Of the 1,183 ac (479 ha) of mapped vernal pool habitat within the MSCP planning area, over 847 ac (343 ha) occur within the planning area. The Service has completed a Biological Opinion (June 1997) on the San Diego MSCP, and found that the Plan meets the standards set forth in 50 CFR 17.32(b)(2), and has issued an incidental take permit to the City of San Diego for the 85 species covered in the plan, including the Riverside fairy shrimp. The permit action does not, however, authorize impacts to wetlands or wetland communities; the MSCP assumes a policy of "no net loss" of vernal pools. The permit requires that impacts to vernal pools be avoided; unavoidable impacts will be minimized to the maximum extent practicable and mitigated at a 2:1 or 4:1 ratio to prevent any net loss of vernal pool function and value. In addition to conserving existing vernal pool habitat, the Multiple Habitat Planning Area is expected to conserve 7,745 ac (3,134 ha) of undeveloped areas with clay soils and clay hardpan, and implement management and monitoring measures for vernal pools within the area. In the Biological Opinion issues, the Service has specifically addressed the Riverside fairy shrimp, and emphasized the conservation of the hydrological processes needed for vernal pool functioning. Pursuant to section 4(b)(2), we have excluded lands within legally operative HCPs, including the San Diego MSCP, that address the conservation needs of the Riverside fairy shrimp, if the plans provide assurances that the conservation measures outlined will be implemented and effective. Please see *Relationship of Critical Habitat to Approved Habitat Conservation Plans* section of the rule below.

9. *Peer Reviewer Comment:* Several reviewers stated that the proposed critical habitat designation does not go far enough to provide for the protection of the Riverside fairy shrimp, because significant portions of the species' range were excluded from critical habitat protection. These areas include Department of Defense lands and MSCP/HCP lands. The Riverside fairy shrimp populations in these areas, particularly those on Department of

Defense land, are not protected and are either being lost at present, or vulnerable to loss due to a number of sources and activities, including military maneuvers, crushing by vehicles and toxic poisoning from vehicles or ordnances. In fact, lands under the jurisdiction of HCPs, MSCPs, and the Department of Defense have continued to lose populations of San Diego fairy shrimp (e.g., Cousin's pool, Marine Corps Air Station Miramar) and restoration/creation efforts have thus far not succeeded, and this will likely happen with the Riverside fairy shrimp unless adequate protection is provided for the existing populations. For example, in San Diego County, 66 of 67 vernal pools occupied by the federally endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) have been recently lost in Mira Mesa, an area covered by the San Diego County MSCP. Thus, the benefits of exclusion do not outweigh the benefits of inclusion due to the significantly increased threat to the species survival that exclusion of critical habitat poses to the species.

*Our Response:* We do not agree with the peer reviewer that excluding critical habitat on lands covered by an HCP or INRMP poses a "significantly increased threat to the species survival." Please refer to the responses to Peer Reviewer Comments 7 and 8 above, and the sections *Relationship of Critical Habitat to Department of Defense Lands* and *Relationship of Critical Habitat to Approved Habitat Conservation Plans* below.

10. *Peer Reviewer Comment:* The small amounts of habitat designated as critical habitat may be questionable. The strip along the international border in the proposed rule (Map Sub-unit 5B, southwestern Otay Mesa) appears to be mitigation or restoration from the Border Infrastructure System. It is not clear that the current hydroperiods are comparable to the pre-impact hydroperiods. Further, it appears that the Department of Homeland Defense drives vehicles through the pools with impunity, without the need for permitted take from the Service. Habitat of such dubious condition is not a suitable substitute for the excluded (but intact) habitat surrounding the proposed areas on western Otay Mesa (critical habitat Map Sub-units 5A, 5B).

*Our Response:* Please refer to the response to Comment 4-1 below.

11. *Peer Reviewer Comment:* Areas of critical habitat that have been excluded in the proposed rule are under a high level of threat, and local populations of Riverside fairy shrimp in those areas thus face considerable risk of being extirpated, as has happened with

populations of the San Diego fairy shrimp. Currently, there is not enough scientific information on the population genetic structure or life history of the Riverside fairy shrimp to be able to predict the consequences of population losses. Without such data, it is not possible to identify the areas of highest genetic variability, population sources and sinks, levels of gene flow, gene flow distances, evolutionarily significant units or population viability requirements. Loss of critical populations or connections between populations could increase the probability of extinction and put the species as a whole in jeopardy. Thus, it is important that all populations of the Riverside fairy shrimp be included in the critical habitat designation to provide adequate protection of the species as required by the Act.

*Our Response:* We recognize the current threats facing the Riverside fairy shrimp, the need to minimize fragmentation effects, and to provide adequate conservation protection. However, we did not designate critical habitat for all populations of the Riverside fairy shrimp. Some areas in our proposed designation were not designated as critical habitat for the following reasons: (1) The area did not meet the definition of critical habitat under section 3(5)(A) of the Act, (2) the area is now included within legally operative HCPs, (3) the area was necessary for national security measures, or (4) economic impact costs. However, for some areas which were excluded from critical habitat under section 4(b)(2) of the Act, or exempted under section 4(a)(3) of the Act, the Riverside fairy shrimp still receives protection under conservation plans such as HCPs or INRMPs.

12. *Peer Reviewer Comment:* According to the proposed rule, critical habitat is identified for the Riverside fairy shrimp in six separate units, each of which correspond to the larger Management Areas that support Riverside fairy shrimp occurrences as outlined in the Recovery Plan (Service 1998; 2004). However, the management areas specified in the Recovery Plan for Vernal Pools of Southern California are based on simple geographical locations, not the biology of the species considered, and the Recovery Plan does not include a population viability analysis. Genetic information on the San Diego fairy shrimp has shown that these management areas do not coincide with the species' evolutionarily significant units based on the population genetic structure of the species. The identification of populations essential to the species requires genetic analysis and

life history analysis to determine “source/sink” status and to evaluate the viability of the population and probability of persistence. Simple geographic location is not sufficient, especially considering the amount of loss of intervening habitat. The management areas are therefore not relevant to the species’ conservation, a fact which likely also applies for the Riverside fairy shrimp (Bohonak *et al.* 2003).

*Our Response:* We agree that no scientific information is available on the genetic diversity of the Riverside fairy shrimp, as is the case for the San Diego fairy shrimp. Thus, we used geographical descriptions to identify critical habitat units. These geographical descriptions are not meant to suggest any evolutionary divergence or population genetic structure. At the same time, we also based our analyses on what areas constituted critical habitat upon the best available scientific and commercial data available to us at the time, and made available public comment periods to allow for submission of any new information.

13. *Peer Reviewer Comment:* The proposed rule stated that an artificial vernal pool complex had been created to offset the impacts to a population of Riverside fairy shrimp by the Redhawk Development, and that another artificial vernal pool creation was planned in order to offset the taking of Riverside fairy shrimp at the Clayton Ranch Pool. Two reviewers questioned whether these artificial pools have produced viable, reproducing populations with positive rates of increase, rather than simply hatching shrimp from the transplanted cysts. To the reviewers’ knowledge, no such successes have been recorded in the primary literature; *i.e.*, see Ripley *et al.* (2004). Furthermore, the proposed rule stated that on Otay Mesa in San Diego County, significant work had been done to restore and enhance vernal pools for listed species, including the Riverside fairy shrimp. However, the reviewers noted that due to failure to check the transplanted cysts, the Otay pools have become “infected” with a “weedy” species, the winter fairy shrimp (*Branchinecta lindahli*), which can hybridize with the San Diego fairy shrimp (Fugate 1998); its effect on the Riverside fairy shrimp is yet unknown. Thus, the restoration or creation efforts have not been verified as successful (producing viable populations and a growing cyst bank) for either San Diego fairy shrimp or Riverside fairy shrimp, and have in fact, introduced new potential threats.

*Our Response:* We did not designate any artificial vernal pools as critical habitat for the Riverside fairy shrimp.

#### Public Comments

##### Issue 1: Policy and Regulations

1–1. *Comment:* It was suggested that all essential Riverside fairy shrimp habitat areas within the boundaries covered by the Western Riverside County Habitat Conservation Plan (HCP), Central/Coastal Orange County Natural Community Conservation Program (NCCP), and San Diego Multiple Species Conservation Plan (MSCP) should be included in the final critical habitat designation because (a) areas within those plans meet the definition of critical habitat; the Service has identified those areas as essential to the conservation of the species, and the plans provide special management for the species, (b) the benefits of inclusion far outweigh the harm wrongly perceived by others, (c) the critical habitat designation provides greater conservation benefits than those contained in the plans, which are inadequate to conserve the Riverside fairy shrimp, (d) because the educational benefits of HCPs are much less than those provided by critical habitat designation, and (e) the critical habitat designation has greater specificity, addressing the needs of specific species, than HCPs. Another commenter suggested that the critical habitat designation should be expanded to include all Riverside fairy shrimp populations, including those in excluded Department of Defense lands or HCP areas. In contrast, one commenter suggested that lands within the Western Riverside County MSHCP do not require additional special management considerations or protection, and thus do not meet definition of “critical habitat.”

*Our Response:* Although the habitat within the boundaries of these conservation plans contains one or more of the physical and biological characteristics essential to the conservation of the Riverside fairy shrimp, we have determined that these conservation plans provide special management and/or protection for the Riverside fairy shrimp, and we have concluded that the benefits of excluding the lands covered by these plans from the final critical habitat designation outweigh the benefits of including these areas. Thus, we have excluded these areas from critical habitat designation under 4(b)(2) of the Act.

We recognize that critical habitat is only one of many conservation tools for federally listed species. HCPs are one of

the most important tools for reconciling land use with the conservation of listed species on non-Federal lands. Section 4(b)(2) of the Act allows us to exclude from critical habitat designation areas where the benefits of exclusion outweigh the benefits of designation, provided the exclusion will not result in the extinction of the species. We believe that in most instances, the benefits of excluding HCPs from critical habitat designations will outweigh the benefits of including them. For this designation, we find that the benefits of exclusion outweigh the benefits of designation for all approved and legally operative HCPs which address the Riverside fairy shrimp and provide for its long-term conservation. These include the San Diego MSCP in San Diego County, the Western Riverside County MSHCP and the Rancho Bella Vista HCP and Assessment District 161 Sub-regional HCP in Riverside County.

HCPs must meet issuance criteria, according to section 10(a)(1)(B) of the Act, including minimizing and mitigating any take of the listed species covered by the permit to the maximum extent practicable, and that the taking must not appreciably reduce the likelihood of the survival and recovery of the species in the wild. The take minimization and mitigation measures provided under the above-mentioned HCPs are expected to adequately protect the essential habitat lands designated as critical habitat in this rule, such that the value of these lands for the survival and recovery of the Riverside fairy shrimp is not appreciably diminished through direct or indirect alterations. We expect that HCPs undertaken by local jurisdictions (*e.g.*, counties and cities) and other parties will identify, protect, and provide appropriate management for those specific lands within the boundaries of the plans that are essential for the long-term conservation of the species. We discuss these standards in detail in the *section 7 Consultation and Relationship of Critical Habitat to Approved Habitat Conservation Plans* portions of this document below).

1–2. *Comment:* It was suggested that the essential Riverside fairy shrimp habitat areas within the boundaries covered by the Western Riverside County HCP should not be excluded as critical habitat because the plan was only recently approved and the protection benefits the plan provided to the species were thus unproven and speculative. According to the Act, the Service cannot base its decisions to exclude areas from its critical habitat designation on unproven conservation activities.

*Our Response:* Under section 4(b)(2), we may exclude any area from critical habitat if we determine that the benefits of such an exclusion outweigh the benefits of including the area in the critical habitat designation, unless, based on the best scientific and commercial data available, we determine that failure to designate the area as critical habitat will result in the extinction of the species. We have excluded the areas within the Western Riverside County MSHCP from the final critical habitat designation under section 4(b)(2) of the Act because the benefits of exclusion outweigh the benefits of inclusion. (For a detailed discussion please see the section *Relationship of Critical Habitat to Approved Habitat Conservation Plans* below).

1–3. *Comment:* Several comments were made that the Service inaccurately overstates the benefits of conservation plans while overemphasizing possible harm of critical habitat designation within plans' boundaries, that the Service cannot rest any claim of harm on mere perceptions; possible complaints by plan participants would suggest intention of significantly reduced conservation compared to those in a designated critical habitat. Critical habitat designation of an area after the approval of an HCP there will not serve as disincentive, but actually encourage HCP preparation.

In an opposing view, one commenter supported the exclusion of critical habitat within the Western Riverside County MSHCP, asserting that if it were included, it would undermine cooperative conservation partnerships. Two commenters stated, in general, that all lands covered by an HCP (e.g., NCCPs/ special area management plans) should be automatically excluded from critical habitat designation upon approval of the respective conservation or management plan.

*Our Response:* It is our experience that most landowners strongly object to inclusion of their lands within critical habitat; thus while proposing a designation may in some cases provide an incentive to participate in developing an HCP, we have no indication that designating private lands as critical habitat encourages the owners to engage in conservation activities. We do recognize that the designation of critical habitat does not provide the same set of conservation conditions that an HCP does, and an HCP may well provide more benefits to the species than critical habitat designation. We recognize that critical habitat is only one of many conservation tools for federally listed species, but HCPs are one of the most

important tools for reconciling land use with the conservation of listed species on non-Federal lands. Furthermore, the benefits of including HCPs or NCCP/HCPs in the critical habitat designation are normally small; i.e., any federally funded or authorized activities in such habitat that may affect critical habitat would require consultation under section 7 of the Act. Such consultation would ensure that adequate protection is provided to avoid adverse modification of critical habitat. Where HCPs are in place, we believe that this benefit is small or non-existent. Although conservation plans are important tools to ensure the species survival and recovery, our actions regarding newly implemented plans are not automatic; it is our policy to carefully review each plan, and only exclude areas from critical habitat designations consistent with section 4(b)(2) of the Act.

1–4. *Comment:* All essential habitats within the boundaries of the Central/Coastal Orange County NCCP/HCP should be included in the critical habitat designation because the Riverside fairy shrimp in natural vernal pools is not covered by these plans, and therefore cannot benefit from the conservation measures in the plan.

*Our Response:* The Riverside fairy shrimp is known to occur in only two areas within the Central-Coastal Orange County NCCP/HCP, which provides for the establishment of approximately 38,738 ac (15,677 ha) of reserve lands for 39 Federal or State listed, unlisted, and sensitive species. Within this NCCP/HCP, we proposed critical habitat at the former Marine Corps Air Station (MCAS) El Toro but we excluded this area pursuant to section 4(b)(2) for economic impacts. We excluded an area within the Edison Viejo Conservation Bank, as their management plan meets our criteria for conservation measure for the species. The Riverside fairy shrimp is also known to occur in the North Ranch Policy Plan area which was originally not included within the Central-Coastal NCCP/HCP. However, in 2002, the Irvine Company, owner of lands within the North Ranch Policy Plan area, granted a conservation easement to The Nature Conservancy over the portion of the land where this vernal pool is located, and provided a \$10 million management endowment. The conservation easement and management endowment ensure conservation of the Riverside fairy shrimp at this site. (For details, see *Relationship of Critical Habitat to Approved Habitat Conservation Plans* below).

1–5. *Comment:* The critical habitat designation does not give landowners effective notice as to whether their property contains critical habitat, causing a burden to landowners who must determine which portions of their land contain critical habitat.

*Our Response:* We identified, as critical habitat, specific areas in the proposed determination that are referenced by UTM coordinates found on standard topographic maps. Note that areas delineated as critical habitat on the maps do not include developed areas within the boundaries that do not contain more than one of the primary constituent elements for the species. During the public comment periods, we also made available the proposed critical habitat units, superimposed on 7.5 minute topographic maps and spot imagery, for inspection by the public at the Carlsbad Fish and Wildlife Office. Furthermore, we distributed geographic data and maps of the proposed critical habitat to all individuals, organizations, local jurisdictions and State and Federal agencies that requested them. We believe the information made available to the public is sufficiently detailed to allow for determination of critical habitat boundaries. This final rule contains the legal descriptions of areas designated as critical habitat required under 50 CFR 424.12(c). The accompanying maps are for illustration purposes only. If additional clarification is necessary, contact the Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, California 92009 (telephone 760/431-9440).

1–6. *Comment:* Essential Riverside fairy shrimp habitat within MCAS Miramar should be included as critical habitat because the habitat under their Integrated Natural Resource Management Plan (INRMP) meets the definition of critical habitat, as the Service has identified those areas as essential to conservation of species and the plan provides special management for the species. Further, the current INRMP (a) does not provide details for any existing or future exotic control project and thus does not provide adequate protection against current threats posed by the spread of exotic plants, (b) contains mainly future plans and few active measures addressing current conservation needs, and little information on when and where the actions will be accomplished, (c) does not include the Navy's past Miramar Vernal Pool Management Plan, i.e., treatment of vernal pools is not mandated, (d) its protection measures are not permanent, i.e., its reference to "political developments" could be seen as future decision to convert base to a

regional airport or other development; (e) identifies the NEPA and the Clean Water Act as primary mechanisms for reconciling land uses with conservation, but these do not provide effective conservation of vernal pools, and (f) the INRMP provides few benefits, as the INRMP and past consultations will not ensure conservation or protection of Riverside fairy shrimp and its essential habitat.

*Our Response:* Under section 4(a)(3) of the Act, we must exempt military lands subject to an INRMP from critical habitat if that plan provides a benefit to Riverside fairy shrimp. The lands at MCAS Miramar are covered by an approved INRMP that identifies sensitive natural resources within management areas that have various resource conservation requirements and management concerns. These areas have been assigned five levels of conservation priority corresponding with their sensitivity, with *e.g.*, Level I management areas receiving the highest proactive measures. MCAS Miramar continues to monitor, restore and manage its vernal pool resources, including studies in progress, and has indicated it has no plans for changes in future land use. MCAS Miramar has completed an INRMP which we have reviewed and determined that it provides benefits to the Riverside fairy shrimp. Therefore, lands at MCAS Miramar have not been included in the proposed or final designation in accordance with 4(a)(3) of the Act (for more details, see benefits analysis in proposed rule (69 FR 23024) under *Relationship of Critical Habitat to Department of Defense Lands; Marine Corps Air Station Miramar*).

1-7. *Comment:* The Service did not provide for adequate public notice of the proposed rule and sufficient opportunity for public comment. Additionally, requests for extension of the comment period were denied, while previous comments have not been acted upon. The 30-day comment period on the draft economic analysis lacks compliance with the required 60-day comment period per the Service's own regulations, the Act and the Regulatory Flexibility Act; with a shorter comment period.

*Our Response:* Pursuant to our implementing regulations at 50 CFR 424.16, we are required to provide for at least 60-days for public comment following the publication of a proposed rule in the **Federal Register**. We published the proposed rule to designate critical habitat for the Riverside fairy shrimp in the **Federal Register** on April 27, 2004 (69 FR 23024), and accepted comments from

the public for 30 days, to May 27, 2004. We contacted all appropriate State and Federal agencies, county governments, elected officials, and other interested parties and invited them to comment on the proposed rule. In addition, we published notices in the San Diego Union Tribune, the Orange County Register, and the Los Angeles Times, all on May 6, 2004. We published a second notice in the **Federal Register** on October 19, 2004 (69 FR 61461), announcing the availability of the draft economic analysis and opening a 30-day public comment period until November 18, 2004, to allow for comments on the draft economic analysis and additional comments on the proposed determination. We provided notification of the draft economic analysis through telephone calls, letters, and news releases faxed and/or mailed to relevant elected officials, local jurisdictions, and interest groups. Following its release, we also published the draft economic analysis and associated material on our Web site (<http://carlsbad.fws.gov>). We believe these two public comment periods provided adequate opportunity for public comment and constitute compliance with our implementing regulations at 50 CFR 424.16. Because of the court-ordered time frame, we were not able to extend the second comment period or open an additional public comment period.

1-8. *Comment:* Would the designation of critical habitat for the Riverside fairy shrimp be considered a changed or unforeseen circumstance with respect to the various sub-area HCPs presently approved or pending?

*Our Response:* In this rule, no critical habitat was designated within lands covered by any pending or un-approved HCP.

1-9. *Comment:* One commenter stated that the proposal to designate critical habitat violates the Act because of (a) failure to use the best available science to exclude non-essential lands from the critical habitat designation, (b) failure to determine whether any specific areas may require special management considerations or protection, (c) it does not contain an economic impact analysis; Congress intended that the Service consider economic and other impacts of the critical habitat designation concurrently with the formulation of critical habitat proposals, (d) certification pursuant to the Regulatory Flexibility Act impermissibly relies on the as-yet unavailable economic analysis, reducing ability of public to provide meaningful comment, and because (e) the Service has failed to comply with NEPA prior to designating critical habitat.

*Our Response:* We are directed by the Act to use the best commercial and scientific information available to us at the time we conduct our analyses. In response to part (a), we relied on the best scientific resources when determining to either designate areas essential to the conservation of the Riverside fairy shrimp and to exclude other areas from our final critical habitat designation. Our final delineation of critical habitat is based on the best available scientific and commercial data regarding the species, including a compilation of data from peer-reviewed published scientific literature, unpublished or non-peer-reviewed survey or research reports, and statements from expert biologists knowledgeable about the Riverside fairy shrimp and its habitat. In addition to the above information available to us, we also requested additional information from the public and from peer reviewers to further assist us in our analyses. All new information that was provided during the public comment periods was considered in this final designation, as appropriate. The areas designated as critical habitat represents our best estimate of what areas are essential and critical for the conservation of the species. In response to part (b), please refer to our section *Relationship of Critical Habitat to Approved Habitat Conservation Plans* for details on our analyses of approved conservation plans. In response to comments (c) and (d), we have provided a draft economic analysis, available for public review during the second comment period, giving individuals opportunity to submit comments on its contents, which we have reviewed and addressed in this rule. In response to comment (e), we are not required to prepare environmental analyses as defined by the NEPA in connection with designating critical habitat under the Endangered Species Act of 1973, as amended. (For more details, see *National Environmental Policy Act (NEPA)* below).

1-10. *Comment:* Would on-going activities (such as routine inspections, road grading, construction, etc.) that occur adjacent to designated critical habitat be considered to appreciably decrease habitat values or quality through indirect effects?

*Our Response:* The Federal agency planning to conduct such activities must determine if their proposed action may affect critical habitat designated for the Riverside fairy shrimp. The action agency determines whether their action(s) "may affect" the Riverside fairy shrimp or its primary constituent elements within the adjacent critical habitat based on their analyses. If so, the

action agency would enter into consultation with the Service under section 7.

1–11. *Comment:* Can the Service exclude all areas addressed under existing section 7 permits in a manner similar to the exclusions for areas covered under existing section 10 permits? Specifically, can an existing section 7 permit based on a biological opinion for the California gnatcatcher be amended to cover the Riverside fairy shrimp critical habitat in the Otay Mesa area? Specifically, this would be necessary for ongoing operations and maintenance by the San Diego County Water Authority of the Mexico Emergency Connection Pipeline on the western portion of Otay Mesa (final Map Unit 4).

*Our Response:* Consultation under section 7 of the Act does not result in the issuance of a section 7 “permit” per se. Federal actions that we conclude are not likely to jeopardize the continued existence of a listed species are exempted from the prohibition against take of listed animal species under section 9 of the Act so long as the Federal agency and any permittee comply with the terms and conditions of the incidental take statement accompanying the Service’s biological opinion. Assuming the Federal agency that was subject to consultation under section 7 of the Act for a listed species still retains discretionary jurisdiction over the action, the Federal agency must re-initiate section 7 consultation if its action “may affect” designated critical habitat for the Riverside fairy shrimp. See *Section 7 Consultation* below.

1–12. *Comment:* One commenter requested that the Major and Minor Amendment areas of the eastern portion of Otay Mesa, southern San Diego region (Map Unit 5C), be excluded from the critical habitat designation because these areas must conform to the MSCP, sub-area plans, and the resource protection ordinance, and a critical habitat designation would result in additional section 7 requirements, economic burdens on HCP participants, discourage HCP development, cause additional regulatory review that could jeopardize ongoing conservation efforts, possibly encourage legal challenges to the HCPs because of the uncertainty of the “adverse modification” threshold, and afford no additional benefit to the species because HCPs provide better long-term conservation measures.

*Our Response:* Although the Major/Minor Amendment areas are within the boundaries of the San Diego MSCP, these areas are not covered by completed plans that address the conservation of the Riverside fairy

shrimp. While we have excluded lands covered by approved sub-area plans under the MSCP, the plans for the Major/Minor Amendment areas are incomplete and thus do not provide adequate conservation measures addressing the Riverside fairy shrimp. However, we have excluded all of Sub-unit 5C in private ownership within the Otay Mesa Major/Minor Amendment areas, under section 4(b)(2) of the Act, in order to avoid some or all of the additional costs incurred by affected landowners.

1–13. *Comment:* One commenter suggested that the areas proposed as Riverside Fairy Shrimp critical habitat (a) do not need special protection or satisfy the definition of critical habitat because they receive substantial protections under new regulations (*i.e.*, Clean Water Act, Porter-Cologne Water Quality Control Act, California Environmental Quality Act, California Department of Fish and Game permitting codes, State Water Board regulations; and (b) must be re-evaluated to determine whether the habitat requires special protection in light of new regulations governing such areas, *i.e.*, the California Porter-Cologne Water Quality Control Act.

*Our Response:* While the statutes listed above may provide some regulatory protection for the Riverside fairy shrimp and its associated essential habitat, they do not provide assured management for the species.

Therefore, exclusion of essential habitat from this designation on the basis of the regulatory protections potentially afforded by these statutes is not warranted.

1–14. *Comment:* One commenter asserted that Service has unlawfully pre-determined that exclusion from the final critical habitat designation of essential Riverside fairy shrimp habitat that lies within other conservation plan areas outweighs any benefits of inclusion because the acknowledged essential habitat was excluded prior to the public’s review of the Service’s analyses of benefits and harm.

*Our Response:* Notice of our intent to exclude lands within approved and/or pending HCPs was provided to the public, and maps showing the lands proposed for exclusion were readily available to the public for inspection during the two public comment periods. We solicited comments from the public for 30 days about the areas which we proposed to include or exclude from the proposed rule to designate critical habitat for the Riverside fairy shrimp on April 27, 2004 (69 FR 23024). In the **Federal Register** notice, we notified the public that we may revise the critical

habitat designation if additional information becomes available that changes our assessment of the relative benefits of including or excluding these areas from critical habitat. We also contacted appropriate State and Federal agencies, county governments, elected officials, and other interested parties and invited them to comment on the proposed rule, and published notices in the San Diego Union Tribune, Orange County Register, and Los Angeles Times on May 6, 2004. We published a second notice on October 19, 2004 (69 FR 61461), announcing the availability of the draft economic analysis and opening a 30-day public comment period until November 18, 2004, and also published the draft economic analysis and associated material on our Web site (<http://carlsbad.fws.gov>). In making our final critical habitat determination, we considered every comment submitted.

## Issue 2: Adequacy and Extent of Critical Habitat Designation

2–1. *Comment:* One commenter stated that there is no substantiation for an increase in area designated as critical habitat from the previous critical habitat rule issued on May 30, 2001 (66 FR 29384).

*Our Response:* In the May 30, 2001, final critical habitat rule for the Riverside fairy shrimp (66 FR 29384), we designated approximately 6,870 ac (2,790 ha) as critical habitat. Since then, additional, new information on vernal pools and the occurrences of the little-studied Riverside fairy shrimp has become available, while on the other hand, numerous of the discovered essential areas have been included in several regional HCPs or INRMPs. Thus, on April 27, 2004, we proposed to designate approximately 5,795 ac (2,345 ha) of vernal pools and their adjacent watersheds essential to the conservation of the species as critical habitat for the Riverside fairy shrimp (69 FR 23024). This final determination designates 306 ac (124 ha) as critical habitat, which represents less than five percent of the area originally designated as critical habitat in the previous rule of 2001.

2–2. *Comment:* One commenter stated that the Service did not use an appropriate mapping scale for this species, and since the species’ range is well known in San Diego County, the Service should have been able to delineate critical habitat boundaries with extreme precision. The current 100 m<sup>2</sup> blocks include areas that do not have the PCEs for the Riverside fairy shrimp, and those areas should be excluded. Another commenter asked whether the Service intends to exclude from the designated critical habitat all existing

roads, aqueducts, etc. regardless of the state of these features.

*Our Response:* We are required to define and delimit critical habitat by specific limits using reference points and lines as found on standard topographic maps of the area" (50 CFR 424.12(c)). We have delimited the boundaries of critical habitat boundaries in this rule based on a minimum mapping scale of 100 m. This mapping scale was based on the availability and accuracy of aerial photography and GIS data layers used to develop the designation. In drawing our critical habitat boundaries for the proposed and final rules, we have attempted to exclude all areas that do not contain essential habitat for the Riverside fairy shrimp as defined by its PCEs. Based on information obtained through public comments and updated imagery and GIS data layers, we have been able to further refine the boundaries of critical habitat during the development of this final rule. Within the limitations of our mapping scale, we have been able to exclude most, but not all areas, that do not contain the PCEs, including some man-made features. Note, however, that we have determined that existing man-made features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas are not likely to contain one or more of the PCEs and thus do not constitute critical habitat and the lands on which they are found. Activities in these areas are unlikely to affect PCEs (*i.e.*, essential habitat for the Riverside fairy shrimp), and therefore, consultation under section 7 of the Act would not be required unless such activities would affect the species or adjacent critical habitat. In making the critical habitat designation, we used the best scientific and commercial information available to us, including information obtained during the two public comment periods

2–3. *Comment:* The proposed critical habitat designation violates the Act because of the Service's failure to limit the designation to areas essential to the conservation of the Riverside fairy shrimp.

*Our Response:* In proposing critical habitat designation, we used the best scientific and commercial information available to determine those areas essential for the conservation of the Riverside fairy shrimp. We used additional information available to us, including a more detailed aerial imagery, a finer mapping grid (changed from 250 m<sup>2</sup> to 100 m<sup>2</sup>), as well as information provided by commenters to refine our mapping of all essential habitat included in the final

designation. Please see the sections *Background, Criteria Used to Identify Critical Habitat, and Critical Habitat Designation* of this rule for further discussions on how we determined habitat that is essential to the conservation of the species. The areas designated by this final rule are limited to lands essential for the conservation of the Riverside fairy shrimp.

2–4. *Comment:* Rancho Mission Viejo stated that in the proposed rule: (a) The Service used a "recovery standard" which resulted in an overly broad critical habitat designation, (b) the Service did not provide scientific data to indicate how it determined the extent of watersheds that comprise the extent of critical habitat within Rancho Mission Viejo, and that (c) one vernal pool (within Map Unit 2), included in the proposed designation, no longer exists.

*Our Response:* The definition of critical habitat in section 3(5)(A) of the Act includes "(i) specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." The term "conservation," as defined in section 3(3) of the Act, means "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary". In designating critical habitat for the Riverside fairy shrimp, we identified those areas that are essential to the conservation of this species. The areas we designate as critical habitat provide one or more of those habitat components essential for conservation of the Riverside fairy shrimp. In this final rule, we have not included all areas currently occupied by the Riverside fairy shrimp, but instead have designated those areas that are essential for the conservation of the species and that may possess large populations, have unique ecological characteristics, and/or represent the known historic geographic areas where the Riverside fairy shrimp can be re-established. The Recovery Plan (Service 1998) details some measures to meet the recovery needs of the Riverside fairy shrimp, and provides a description of habitat attributes that are essential to conservation of the species. We believe

that we used the best scientific and commercial information available in determining those areas essential for the Riverside fairy shrimp that were proposed as critical habitat and subsequently finalized. Please see the sections *Background, Criteria Used to Identify Critical Habitat, and Critical Habitat Designation* of this rule for further discussion on how we determined habitat that is essential to the conservation of the Riverside fairy shrimp.

#### Issue 3: Biological Justification and Methodology

3–1. *Comment:* There is insufficient data to show that the Riverside fairy shrimp is present in the proposed critical habitat areas at March Air Reserve Base (March ARB). Further, the Service did not use best scientific data available in the proposed critical habitat designation, as it did not consider the "1998 Fairy Shrimp Surveys at March Air Reserve Base, Riverside County, California" (RECON Number 2965B, September 14, 1998) which concluded that "potential habitats at March Air Reserve Base are of poor quality and do not support the Riverside fairy shrimp." Because the surveys indicated that the habitat was unoccupied, the pools on March ARB are not essential to the conservation of the species.

*Our Response:* The delineation of critical habitat for the Riverside fairy shrimp was based on the best available scientific and commercial data regarding the species. During both public comment periods, all new information provided was considered in this final designation, as appropriate. The areas proposed and designated as critical habitat, as described, represent our best estimate of what areas are essential and critical for the conservation of the species. Critical habitat at March ARB was excluded from critical habitat based on section 4(b)(2) of the Act.

#### Issue 4: Comments on Individual Map Units—Exclusions

4–1. *Comment:* The U.S. Department of Homeland Security (DHS), U.S. Border Patrol, San Diego Sector, submitted comments (May 27, 2004) raising the following issues: (1) Lands owned by the DHS within Sub-units 5B and 5C have previously been disturbed and developed by the construction of the Border Infrastructure System (BIS), (2) the DHS has conducted two restoration projects to offset losses for fairy shrimp, and 135 ac (55 ha) of DHS-owned lands located north of the BIS have been designated as mitigation for completion of the border system and

should not be designated as critical habitat. DHS has made a commitment to the Service to transfer these lands to a conservation resource agency and/or to protect and conserve the lands in perpetuity, (3) lands within the footprint of the BIS do not or will not contain any of the primary constituent elements for the Riverside fairy shrimp once construction is completed, and (4) the BIS is considered integral to national security.

*Our Response:* We have excluded essential habitat within DHS-owned lands along the U.S.-Mexico border (*i.e.*, all of Sub-unit 5B, and portions of Sub-unit 5C) under section 4(b)(2) of the Act and removed non-essential areas. The concerns related to the presence or absence of primary constituent elements within the footprint of the BIS are moot because no lands owned by the DHS have been designated as critical habitat. For a detailed explanation, please see the section *Application of Section 4(b)(2) to Department of Homeland Security (DHS) lands* below.

4-2. *Comment:* March ARB requested that vernal pools located on their lands be excluded from critical habitat under section 4(b)(2) of the Act because designation would adversely impact commercial reuse of former military property currently under development, severely limit civilian aviation at the joint-use March ARB airport, result in aviation delays, jeopardize public safety and impact firefighting mission of California Department of Forestry, increase possible risk of bird-aircraft strikes, and "adversely impact mission execution and military training critical to national security." One pool is located near the airfield zone where ongoing maintenance is necessary to ensure proper drainage and prevent possible runway damage. Further, they suggested that the vernal pools on March ARB (called Pools 3 and 6 by March ARB) do not meet the definition of "critical habitat," suitable habitat for the Riverside fairy shrimp is not present or determinable and cannot be maintained on March ARB, and the pools are not essential to the conservation of the species as required by Act. Thus, the benefits of exclusion outweigh benefits of inclusion, will not result in extinction of the Riverside fairy shrimp, and the proposed critical habitat designation is not prudent. The Air Force's Environmental Impact Analysis Process ensures the compliance of March ARB with the NEPA, and also, an INRMP is being revised that will ensure all potential habitat areas on March ARB will be investigated for Riverside fairy shrimp.

*Our Response:* We have determined to: (1) Remove Sub-unit 3A from this critical habitat designation as the area has been modified and no longer contains the primary constituent elements for the Riverside fairy shrimp, and (2) exclude Sub-unit 3B from this final critical habitat designation according to section 4(b)(2) of the Act. The main benefit of the latter exclusion is to ensure that mission-critical military flight activities can continue without interruption at March ARB while their INRMP is being completed. Under section 4(b)(2) of the Act, we may exclude lands from critical habitat if the benefits of excluding them, including the benefits to national security, outweigh the benefits of including them in the designation. We have determined that the benefits to national security of excluding lands within Sub-unit 3B from critical habitat outweighs the benefits of including these lands in the critical habitat designation (*see Application of Section 4(b)(2) to March Air Reserve Base (March ARB)* for a detailed discussion).

4-3. *Comment:* We received comment letters from the Federal Aviation Administration (FAA) and Los Angeles World Airports (LAWA; Sapphos Environmental 2004) regarding the proposed designation of critical habitat at the Los Angeles International Airport (Sub-units 2A and 2B). FAA and LAWA questioned the appropriateness of the proposed designation of critical habitat because of past decisions by the Service in the Recovery Plan for Vernal Pools in Southern California, previous designation of critical habitat for the Riverside fairy shrimp, the April 2004 biological opinion for the Los Angeles International Airport Master Plan, concern for the potential increased risk to public safety and air navigation, and conflicts with FAA's mission. These agencies also recommended that critical habitat not be designated within the Los Angeles International Airport because of the ongoing section 7 consultations for the Riverside fairy shrimp with FAA and LAWA for their operations and maintenance activities and the absence of the primary constituent elements for the Riverside fairy shrimp within the proposed critical habitat units.

*Our Response:* In the proposed rule, we identified vernal pools at the Los Angeles International Airport (LAX) as critical habitat (Sub-units 2A, 2B). As a result of the ongoing operations and maintenance activities at LAX, the requirement of the primary constituent element related to the length of time that ponding seasonally occurs within these ephemeral wetlands is not met. Thus, these ephemeral wetlands do not

contain this primary constituent element; the Riverside fairy shrimp is unable to complete its lifecycle at LAX without these pools being inundated for a minimum of two months. Thus, we conclude that the ephemeral pools originally proposed as critical habitat at LAX are not essential for the conservation of the Riverside fairy shrimp and we are not designating them as critical habitat.

4-4. *Comment:* The U.S. Marine Corps has requested the exclusion of lands on Marine Corps Base (MCB) Camp Pendleton from critical habitat designation per the Act, under section 4(a)(3) and section 4(b)(2). They stated that MCB Camp Pendleton has an INRMP that provides significant direct and indirect benefits to the Riverside fairy shrimp, that section 7 provides sufficient protection for the Cocklebur Sensitive Area as described in a previous biological opinion (1-1-82-I-92) and therefore, this area should be excluded from critical habitat. They stated that designation would interfere with the base's critical military training mission and military readiness and concurred with the Service's proposal to exclude mission-critical areas from critical habitat designation.

*Our Response:* According to section 4(a)(3) of the Act, we must exempt Department of Defense lands covered by an INRMP from the critical habitat designation if we determine that the INRMP provides a benefit to the Riverside fairy shrimp. We have reviewed Camp Pendleton's INRMP and conclude that their plan provide a benefit to the Riverside fairy shrimp. With the INRMP in place and progress being made towards improving the protection of Riverside fairy shrimp, we have therefore exempted MCB Camp Pendleton under section 4(a)(3) of the Act. *See the Exclusion of Critical Habitat Under Sections 4(a)(3), 3(5)(A) and 4(b)(2) of the Act* section below for further discussion of lands excluded from critical habitat.

4-5. *Comment:* We received a request to exclude areas owned by San Diego Gas and Electric (SDG&E) that fall within their sub-regional NCCP/HCP boundaries from the critical habitat designation because these areas do not meet definition of critical habitat (*i.e.*, is covered by an HCP plan) and exclusion will not pose any potential risk to the Riverside fairy shrimp. Designation of critical habitat imposes economic burdens on HCP participants, increases the cost of consultation, increases delay, imposes additional regulatory review, and will reduce incentive to participate in the HCP process. HCPs provide a much greater conservation benefit to



private land areas than other Endangered Species Act programs, while critical habitat designation affords no additional benefits to the species as section 7 is applied on an inconsistent and sporadic basis, and does not provide long-term protection.

*Our Response:* Where site-specific documentation was submitted to us providing a rationale as to why an area should not be designated critical habitat, we evaluated that information in accordance with the definition of critical habitat pursuant to section 3 of the Act. We made a determination as to whether modifications to the proposal were appropriate. We reviewed the maps to ensure that only those lands essential for the conservation of the Riverside fairy shrimp were designated as critical habitat. We excluded lands from the final designation that we determined to be non-essential to the species' conservation. We also excluded lands, including lands identified in the Vernal Pool Recovery Plan that were included in an approved HCP which provides for the conservation of Riverside fairy shrimp, and where we determined that the benefits of excluding those areas outweighed the benefits of including them. We included lands in the final designation that are essential to the conservation of the species which may require special management considerations or protection for the Riverside fairy shrimp. Portions of essential habitat areas within the SDG&E Sub-regional Plan which are used for SDG&E operational maintenance activities have been excluded from critical habitat based on section 4(b)(2) of the Act. This sub-regional plan and the clarification document (July 2004) defines avoidance, minimization, and offsetting measures to be implemented by SDG&E for the operations and maintenance activities and future construction of new facilities and roads.

4–6. *Comment:* Skyline Ranch suggested that lands owned by Pardee Homes be removed from critical habitat designation because it does not fit critical habitat designation, and is not within the geographical area occupied by the species. The commenter stated that: (a) The Service has no proof showing Cruzan Mesa pools in Skyline Ranch property are occupied; attached information referred to two surveys conducted in 2002 and 2003 that recorded the vernal pool fairy shrimp (*Branchinecta lynchi*), but did not record Riverside fairy shrimp on Cruzan Mesa; (b) because the Service has not made a finding that the site is essential to the species, and Skyline Ranch does not need special management or

protection, the site cannot be designated critical habitat; (c) the area that has been proposed as critical habitat (536 ac) exceeds the area that contains the PCEs. Pardee Homes engaged Sikand Engineering, whose hydrological model determined that the maximum surface area of the two main pools was 12 ac (5 ha) and the tributary area necessary to fill the pool volumes from rainfall runoff constituted 90 ac (36 ha), totaling 102 ac (41 ha), and (d) the benefits of excluding outweigh the benefits of including lands within Skyline Ranch as critical habitat; exclusion would not lead to the extinction of the species. The commenter listed the benefits of exclusion from critical habitat designation as the implementation of Pardee plans to construct approximately 1,344 single family detached homes on the property, creation of new jobs and tax revenues for local jurisdictions, and the removal of burden of substantial impending litigation to Skyline Ranch property by "No Growth" advocates.

*Our Response:* Cruzan Mesa (proposed Map Sub-unit 1C), constitutes a portion of a larger area of Pardee-owned property (Skyline Ranch). Cruzan Mesa contains several isolated vernal pool complexes within a unique topography, *i.e.*, a topographically enclosed basin atop a large, elevated mesa (1,230 ft (375 m)) on an eroded foothill. In 2004, the Los Angeles County Department of Regional Planning proposed to designate a 958 ac area Sensitive Ecological Area (SEA), including all of Cruzan Mesa, due to its regional biological values. In evaluating the Cruzan Mesa sub-unit, we relied upon various sources, including information in the Final Recovery Plan for Vernal Pools of Southern California (Service 1998) and the Biological Resources Assessment Report of the Proposed Cruzan Mesa Vernal Pools SEA prepared for the Los Angeles County Department of Regional Planning (PCR Services 2000). This information referenced the occurrence of Riverside fairy shrimp at Cruzan Mesa. Information from the referenced comment letter refers to another survey of some vernal pools on Cruzan Mesa that did not encounter Riverside fairy shrimp. However, we have not designated critical habitat on Cruzan Mesa for the Riverside fairy shrimp because at present, we do not have sufficient documentation supporting the occurrence or non-occurrence of the Riverside fairy shrimp in the Cruzan Mesa vernal pools. Thus, we have concluded that Cruzan Mesa is not essential for the Riverside fairy shrimp.

4–7. *Comment:* San Diego County Water Authority, citing undue increased

regulatory burden, costs, and administrative delays that would be caused by a critical habitat designation, requested that their facilities (the Mexico Emergency Connection Pipeline) on Otay Mesa (Sub-unit 5C) be excluded or, alternatively, that provisions be made in the designation to address the existing activities and operations within their right-of-way, through either exclusions or textual exemptions.

*Our Response:* Please see the response to comment 1–10 above and discussion in *Section 7 Consultation*, below. Please note that critical habitat within Sub-unit 5C has been excluded based on section 4(b)(2) of the Act.

4–8. *Comment:* One commenter stated that critical habitat designation should exclude Rancho Mission Viejo lands (within Map Sub-units 2F and 2G) "in light of disincentives to continued participation in conservation planning," because of a pending HCP, and because the benefits of exclusion outweigh benefits of inclusion.

*Our Response:* We are continuing to work with Rancho Mission Viejo to complete their HCP (please see *Relationship of Critical Habitat to HCPs in Development* section below). The South Orange County NCCP/HCP covers approximately 128,000 ac (51,799 ha) of land within the plan area and has been in development for a number of years. This NCCP/HCP planning effort includes the participation of Rancho Mission Viejo and the cities of Rancho Santa Margarita, Mission Viejo, San Juan Capistrano and San Clemente, and the County of Orange. However, the Environmental Impact Statement and Environmental Impact Report for the NCCP/HCP proposal have not been released for public review and comment. There are altogether at least four vernal pools that support the Riverside fairy shrimp within the study area of the South Orange County NCCP/HCP (please see *Critical Habitat Designation* below for more information). The features within these pools have been determined to be essential to the conservation of the species and may require special management consideration or protections. Please note that critical habitat within these subunits has been excluded based on section 4(b)(2) of the Act.

4–9. *Comment:* The vernal pool on the former MCAS El Toro does not have the PCEs to support the Riverside fairy shrimp and further, critical habitat designation at El Toro would impede the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions

necessary to remediate both soil and groundwater contamination on the property. Thus, the benefits of excluding the pool at El Toro from the critical habitat designation outweigh the benefits of including it.

*Our Response:* We have reviewed the available information and believe that the vernal pool at former MCAS El Toro has the primary constituent elements for the Riverside fairy shrimp. We have excluded all of Unit 2C, consisting of lands within the former MCAS El Toro from critical habitat based on section 4(b)(2) of the Act.

#### Issue 5: Comments on Individual Map Units—Inclusions

5-1. *Comment:* One group and the City of Moorpark requested the inclusion of areas containing vernal pools within Map Unit 1 in the final critical habitat designation as it will help ensure the protection of the habitat and the species. In addition, clarification was given that (a) the vernal pool located on the former Carlsberg Ranch is on part of a land parcel (650,000 ac) owned and managed by the Santa Monica Nature Conservancy, and (b) Sub-units 1A and 1B include portions of land within the Tierra Rejada Greenbelt, an area of land with formal agreement by the Cities of Moorpark, Thousand Oaks, Simi Valley, and the County of Ventura to be preserved for open space and agricultural uses.

*Our Response:* This area is included in our final critical habitat designation, and we have amended our records to include the ownership and land usages information.

5-2. *Comment:* A number of requests were made that additional areas be included in the critical habitat designation because critical habitat provides significant conservation benefits to listed species, is an essential tool for species recovery, it mandates higher habitat conservation standards not otherwise available to the species, provides detailed, practical guidance on locations of areas essential to the species' survival, and also carries a very valuable, practical educational value. It was also requested that the vernal pools identified in Appendices F and G of the Service's Recovery Plan for Vernal Pools of Southern California be included because they are essential to conservation of the species and in need of special management.

*Our Response:* The Recovery Plan for the Vernal Pools of Southern California (Service 1998), discusses vernal pool complexes and pools, their distribution, and known occupancy by federally listed species at the time of the plan's

publication. Not all vernal pools discussed in the plan are known to be occupied by the Riverside fairy shrimp, or considered to be essential to the conservation of the Riverside fairy shrimp. Only those vernal pool habitats that are essential to the conservation of Riverside fairy shrimp were included in the critical habitat designation for the Riverside fairy shrimp. Where site-specific documentation was submitted to us providing a rationale as to why an area should not be designated critical habitat, we evaluated that information in accordance with the definition of critical habitat pursuant to section 3 of the Act. We made a determination as to whether modifications to the proposal were appropriate. We reviewed the maps to ensure that only those lands essential for the conservation of the Riverside fairy shrimp were designated as critical habitat. We removed lands from the final designation that we determined to be non-essential to the species' conservation. We also excluded lands, including those identified in the Vernal Pool Recovery Plan, that were located within an approved HCP, which provides for the conservation of Riverside fairy shrimp, and where we determined that the benefits of excluding those areas outweighed the benefits of including them, or an INRMP which provided a benefit to the species. We included lands in the final designation that are essential to the conservation of the species which may require special management considerations or protection for the Riverside fairy shrimp.

5-3. *Comment:* All essential Riverside fairy shrimp habitat within MCB Camp Pendleton should be included in the critical habitat designation because (a) Service has failed to state how benefits of exclusion outweigh benefits of designation, especially in light of the Act's exemptions that would allow otherwise incompatible military training activities; (b) inclusion will not limit or additionally impact military training and readiness at the base; existing requirements of uplands consultation at MCB Camp Pendleton will ensure the avoidance of adverse impacts to the Riverside fairy shrimp and involve section 7 consultations; thus little benefit of exclusion, (c) it has the benefit of providing the military with clear, independent scientific regulatory guidance on location of critical habitats for the Riverside fairy shrimp and other endangered species, and (d) the benefits of inclusion outweigh any costs of inclusion.

*Our Response:* Please see our responses to *Peer Reviewer Comment 2* and to *Comment 4-4* above, and the

section below on *Relationship of Critical Habitat to Department of Defense Lands*.

#### Issue 6—Miscellaneous

6-1. *Comment:* The U.S. Navy at the former MCAS El Toro commented that the proposed inclusion of the El Toro property as critical habitat was based on erroneous property ownership information, as the Department of Defense still owns almost 3,800 ac of former MCAS El Toro Property. Further, Map Sub-unit 2C included 1000 ac of Navy and Federal Aviation Administration owned property, not 1 ac as described in rule.

*Our Response:* We have noted these errors and have amended our records and this rule.

6-2. *Comment:* The Service's citation of its website as an example of public education about the Riverside fairy shrimp is inadequate; all the available materials about the Riverside fairy shrimp at the website are related entirely to critical habitat.

*Our Response:* We thank the commenter for their observation, and will seek to improve our website with additional educational material on the Riverside fairy shrimp.

#### Comments Related to the Draft Economic Analysis

1. *Comment:* One comment requests that the DEA update its land use and land ownership information regarding the former MCAS El Toro in Orange County. The comment also suggests that the Riverside fairy shrimp conservation activities will impose higher costs on facility improvements and land transfer projects planned for the former base than estimated by the DEA.

*Our Response:* The DEA describes the former MCAS El Toro's likely future land uses based on the best available public information and statements made by knowledgeable individuals in personal interviews. Base Realignment and Closure staff estimated that Riverside fairy shrimp-related conservation costs for El Toro would be \$150,000 over the next 20 years based on the assumption that the Service would allow historical uses of the site to continue if El Toro instituted a particulate monitoring program.

The comment suggests that if historical uses for the site continue and planned improvements to the base uses are implemented, then the habitat mitigation costs incurred by MCAS Tustin, a neighboring base that was also recently decommissioned, serve as a better estimate of costs for El Toro. The Final Economic Analysis (FEA) revises the land use and land ownership

context of the El Toro Sub-unit 2C and accepts the revised cost impact of \$100 million, noting that El Toro plans to acquire expensive land off-site, restore vernal pools, relocate the species to these pools, initiate biological monitoring, and provide for project management.

2. *Comment:* One commenter stated that the DEA underestimates the impact of Riverside fairy shrimp conservation activities on operations and planned capital improvements to March ARB in Riverside County.

*Our Response:* The DEA estimates impacts of Riverside fairy shrimp conservation activities on the former March Air Force Base based on the best available public information and statements made by knowledgeable individuals in personal interviews. For impacts likely to occur in the next 20 years, March Joint Powers Authority staff estimated that \$500,000 would be required to implement required Riverside fairy shrimp conservation while increasing the capacity of drainage facilities within which the habitat is located. The drainage facility improvements would support real estate development on more than 3,000 acres of the former base.

The comment suggests that ongoing operations at March ARB will also need costly modifications to comply with Riverside fairy shrimp-related regulations and laws. Based on March ARB's understanding of NEPA, an additional \$950,000 of environmental studies (at the Environmental Impact Statement level) will need to be completed to maintain operations of its runway and taxiways. In addition, a California Air National Guard heavy equipment unit will require relocation, costing an additional \$31.5 million. Although the comment references additional improvements to the site, including the relocation of California Department of Forestry aircraft to March ARB, construction of a parallel taxiway on the existing airfield, and installation of instrument upgrades as part of the March Inland Port, no information is available about the potential for these projects to impact Riverside fairy shrimp habitat or the magnitude of Riverside fairy shrimp-related project modification, if any.

The FEA accepts revised total cost impacts of \$33.0 million resulting from the California Air National Guard unit relocation, the incremental Environmental Impact Statement costs, and March Joint Powers Authority's drainage improvements.

3. *Comment:* A number of commenters stated that the DEA omits consideration of Riverside fairy shrimp-

related conservation impacts to major transportation infrastructure projects in Southern California.

*Our Response:* The DEA estimated no impacts of Riverside fairy shrimp conservation activities on the proposed extension of the 241 Toll Road based on the best available public GIS information and statements made by knowledgeable individuals in personal interviews. At this time, the project has nine alternatives that range from no action to two alternative road widening projects (I-5 and local arterials, both avoiding construction of the 241 Toll Road itself) to six alignment variations for the toll road. The public review, comment, and approval process for this project has been and is expected to continue be a time-consuming and politically contentious. Given the wide variety of regulatory, institutional, and political factors are play, the ultimate outcome cannot be predicted at this time.

The comment suggests that critical habitat Sub-unit 2H has the potential to add enormous costs to three of the Far East alignments. Additional analysis and interviews with local experts suggest instead that Map Sub-units 2F and 2H lie in the path of the Alignment 7/Avenida La Pata Variation alternative and the A-7 Far East Crossover, Far East (West), and Far East Modified alternatives. While no information is publicly available on the surface area of vernal pools likely to be disturbed by any of these alignments, there is some probability that one of these alignments will be chosen and Riverside fairy shrimp conservation measures may be required prior to project construction.

Given the uncertainty associated with the ultimate outcome, the FEA weights each of the nine project alternatives equally and multiplies the probability of each (1/9 or 11 percent) by an estimated worst case cost impact for each alternative. The analysis assumes no impact (a \$0 economic costs estimate) if the toll road is not built or if the construction footprint is located outside of proposed critical habitat. For alternatives expected to cross Riverside fairy shrimp habitat, the impact is the surface area of all vernal pools in the sub-unit times \$500,000 per acre as a generalized mitigation cost for transportation projects. Based on this revised methodology, the FEA estimates the 241 Toll Road may incur an additional \$43,000 in project modification costs based on available vernal pool surface area data for all nine alternatives.

The Service recognizes that the Toll Road alignment ultimately constructed, if any, will impact local, and possibly

regional, traffic flow. Future differences in traffic flows and volumes can, in turn, have a variety of indirect economic effects, including opportunity costs of labor, efficiency of goods delivery, and growth-inducing effects, among other factors. However, given the high degree of uncertainty associated with the Toll Road project and the variety of factors at play, it is difficult to isolate the unique contribution of the Riverside fairy shrimp conservation activities on the final outcome. Consequently, the FEA does not estimate potential economic impacts associated with potential changes in future transportation patterns attributable to the Riverside fairy shrimp conservation activities.

The comment also suggests that no formal analysis was completed on Caltrans projects underway or just completed in Southern San Diego County. Estimates of project-specific cost impacts based on Caltrans interviews for three projects in the Otay Mesa area of San Diego County can be found in Chapter V of the Economic Analysis.

4. *Comment:* Two comments suggest that real estate assumptions used to calculate impacts to private land development activities in one Southern Orange County sub-unit are inaccurate. The comments also recommend using census tract level data for supply and price effects associated with Riverside fairy shrimp conservation activities.

#### DEA Methods

*Our Response:* The DEA relies on DataQuick's transaction-based 2003 residential market data to characterize real estate prices in all zip codes where critical habitat was proposed. In addition, regional planning agencies such as the Southern California Association of Governments and the San Diego Association of Governments provided the DEA with Global Information System (GIS) layers that describe existing and planned land uses for areas of proposed critical habitat. Biological opinion records from the Service also establish a range for the habitat setaside, given variable project footprint and vernal pool site geometry. The combination of the three datasets produces an estimate of the total value of unimproved land affected by Riverside fairy shrimp-related conservation measures such as on-site habitat setasides.

The DEA considers the potential for habitat set-asides to affect aggregate housing supply and market prices. The San Diego Association of Government's data covering the period of 1990 to 1995 allow for an estimate of gross public

land uses required per 1,000 acres of private development. The Construction Industry Research Board supplies information about building activity since 1993. From this information, a forecast can be made of the Riverside fairy shrimp-related conservation land that is taken from residential development as a share of the market's future demand for land used to build new housing. The result suggests an insignificant or near zero impact on housing market supply and price in all "since listing" time periods and counties and in all but one county during the "2005-2024" time period.

#### Specific Real Estate Assumptions

Several comments object to the use of a 4.25 percent property appreciation rate in the DEA, believing it to be an understatement of the true appreciation rate given an anticipated shortage of finished lots for new housing in the County. To estimate future appreciation in home values, the DEA relies on long-term historical trends which are appropriate for the 20-year forecast utilized by the DEA.

In particular, the DEA relies on the average of a 10-year and a 20-year trend of repeat sales and refinancing of the same properties in California. The price indexing of the same properties over time controls for potential changes in housing quality, location and size over time. These data were obtained from U.S. Department of Labor, Office of Federal Housing Enterprise Oversight. The Service regards this source as the most reliable indicator of long-term real estate price trends because it is less affected by short-term business cycle fluctuations.

Several comments also state that 2004 housing price data would show a significant increase over 2003 data. Although potentially true at the County level, different zip codes may have highly varied year to year changes in housing prices. Establishing the actual year to year change in housing prices at the zip code level would require a purchase of a new dataset and matching (using GIS-based weighting) of this data to critical habitat land areas. Recalculating the median housing price is not possible given the time constraints for preparation of the FEA.

Finally, the comments posit that returns on real estate investments typically fall below the 10 percent level, in contrast to the assumption in the DEA of a 25 percent pre-tax return. These assumptions are used to determine the value of raw land as a percent of finished home price. The DEA bases its calculation on the understanding that the development of

a finished home may require the actions of several major agents who in turn move the land from an agricultural or un-entitled basis to an entitled, paper lot basis through to a finished lot and finished home, at which point the product is sold to the end user. Multiple private entities are likely to have participated in this process, each at different levels of risk.

The comments' preferences for a below-10 percent return on investment apply best to higher volume segments of the homebuilding industry in which a single entity purchases lots, builds homes, and sells them to buyers. The DEA, in contrast, uses a composite risk level that includes the greater returns to speculative land purchase and entitlement obtained for such property, and bases its calculations on a more appropriate composite return of 25 percent.

5. *Comment:* One comment requests that the DEA revise the sub-unit land use and land ownership descriptions for Southern Orange County proposed critical habitat. The comment also states that development of one sub-unit is now foreseeable and will be adversely impacted by Riverside fairy shrimp-related conservation activities.

*Our Response:* The DEA estimated the impacts of Riverside fairy shrimp conservation activities for the Radio Tower Road (Sub-unit 2G) and other Foothill sub-units based on the best available public information and statements made by knowledgeable individuals in personal interviews. After the publication of the notice of availability of the DEA, the Orange County Board of Supervisors changed the designation of the property to Suburban Residential from Open Space, and rezoned much of the land for Planned Community instead of Agricultural.

The FEA analyzes impacts from Riverside fairy shrimp-related conservation using the same methods established and applied to land use data in the DEA. Land that is zoned for development is deemed likely to be developed within the next 20 years, given general trends in land use for the areas identified as supportive of the Riverside fairy shrimp. These areas tend to be generally flat and readily built upon, notwithstanding other development considerations such as infrastructure, and land ownership. Given this conservative assumption, all 753 undeveloped acres of the Radio Tower Road are considered impacted by Riverside fairy shrimp-related conservation measures that include on-site habitat setasides worth \$8 million to

\$45 million dollars in potential land value over the next 20 years.

The FEA also uses corrected references of this region's habitat sub-units to the Ranch Plan, a master planned community covering many thousands of acres of the area.

6. *Comment:* One comment requests that the land ownership and planned uses information for Los Angeles International Airport (LAX) from the DEA be revised. The comment also suggests that the impacts to LAX from Riverside fairy shrimp-related conservation activities in the DEA are grossly understated.

*Our Response:* DEA Methods.

The DEA estimated the impacts of Riverside fairy shrimp conservation activities on LAX based on the best available public information and statements made by knowledgeable individuals in personal interviews. Several individuals contacted for personal interviews did not return phone calls during the process of preparing the DEA. The agency operating LAX, in recent publications, has characterized the airport's daily operations at and major facility expansion plans as incompatible with maintenance of Riverside fairy shrimp habitat.

Given LAX's objectives of minimizing the risk of aircraft-bird collisions that it believes is higher due to the presence of seasonal vernal pools on the airfield, the DEA assumes that Riverside fairy shrimp-related conservation measures would include eventual off-site mitigation of the entire 1.3 acres of wetted area. Adding monitoring and administrative costs to this sub-total, approximately \$950,000 in impacts are estimated for the airport over the next 20 years.

#### Impacts of Significant Events

The comment requests that a full accounting of the cost impact of two significant events be attributed to the designation of critical habitat on the LAX airfield:

- Property loss and loss of life damages resulting from serious aircraft-bird collisions.
- Loss of regional mobility for goods and people given an inability of the airport to complete its planned improvements.

Publicly available literature was searched for references to impacts related to catastrophic events involving bird strikes. One source estimates that between 1990 and 2004 approximately 732 bird strikes have taken place at LAX, inflicting total damages of \$17.5 million. The estimate did not match the damage levels of these incidents to birds

using vernal pool habitat, apart from birds that came into contact with aircraft because of other landscape features, natural or human constructed. It is not possible, therefore, to easily distinguish damage due to Riverside fairy shrimp-related habitat from damage related to birds attracted by other habitat or landscape features.

In addition, these bird strike loss estimates do not include an analysis of hardware or other means that would reduce bird attraction to ephemeral wetlands on airport land without removal of the wetlands as a habitat feature. Current discussions being held between LAX and the Service will explore the installation of equipment that allows for wetlands to be maintained on the airfield while discouraging avian feeding or travel patterns within the habitat.

Regarding airport operation and expansion plans, the DEA assumes that Riverside fairy shrimp conservation activities will have no impact on regional transportation mobility. Based on comments received, additional research was conducted on the potential relationship between LAX's operational capacity and regional economic activity. However, the Service was unable to identify any existing studies providing quantitative analysis of this relationship. A detailed analysis of the impact of LAX on the regional economy and/or the potential for RSF conservation activities to affect airport capacity, would require more time and effort than can be devoted to this FEA.

No information about Riverside fairy shrimp habitat disposition appears in any Environmental Impact Report/Statement alternative besides a loss of a small amount of wetted acreage in Alternative D. A consultation has been completed with the Service regarding Alternative D of the LAX Master Plan, in which construction activities at LAX would require a staging area that will necessitate fill of portions of the vernal pools. A second consultation recently began that will address LAX operations. As a worst case scenario, the FEA calculates the impact of Riverside fairy shrimp conservation as a requirement for LAX to mitigate for the entire loss of vernal pool habitat. At \$500,000 per wetted acre in unit mitigation costs, the sub-total of habitat restoration activities for the worst case scenario is estimated at \$650,000 for LAX.

The comment also stipulates that the restoration monitoring period will last 15 years instead of 5, and that the administrative cost of the operations consultation will amount to \$180,000. The FEA accepts these statements and calculates monitoring impacts at

\$750,000. Administrative costs are listed in the FEA as \$400,000 for historical (since listing) section 7 compliance regarding the Riverside fairy shrimp, and \$180,000 for the recently initiated consultation, for a total of \$580,000 in administrative spending.

#### **FEA References to Documents and Permitting Processes**

The FEA text on LAX's Master Plan and operations has been revised based on new information provided in the comment. EIR/EIS documents released to the public since the appearance of the first drafts of the DEA were reviewed, and the consultation history with the Service was updated.

#### **Land Ownership Information**

The DEA cites GIS layers provided by Southern California Association of Governments as the basis of existing land uses for proposed critical habitat on or near LAX. Table 10 in the DEA notes that Southern California Association of Governments data classifies 3 acres of the proposed habitat sub-unit as private developed, 66 acres as public land, and 35 acres as unfeasible to develop due to physical constraints. The comment requests that all sub-unit land be recognized as airport controlled (public) land. The impacts estimated by the FEA would not change based on the different land use classifications assigned to the proposed critical habitat by either the Southern California Association of Governments or the comment. Hence, the Southern California Association of Governments information will remain the primary source of land use data.

#### **Comments From States**

Section 4(i) of the Act states "the Secretary shall submit to the State agency a written justification for her failure to adopt regulation consistent with the agency's comments or petition." Comments received from States regarding the proposal to designate critical habitat for the Riverside fairy shrimp are addressed below.

1. *State Comment:* The California Department of Fish and Game requested that the Service avoid any later revisions to the proposed critical habitat that would include Department-owned lands.

*Our Response:* No lands or areas within the jurisdiction of the California Department of Fish and Game were considered within the proposed or final critical habitat designation.

#### **Summary of Changes From Proposed Rule**

Based on our review of the public comments received on the proposed designation of critical habitat, the economic analysis for the Riverside fairy shrimp, and available information, we re-evaluated our proposed designation and revised the final critical habitat designation for this species as follows.

#### **Areas Removed From Critical Habitat Designation**

We re-evaluated our proposed critical habitat unit boundaries, refined our mapping methodology, and used new information to remove 4,822 ac (1,951 ha) of non-essential habitat within each critical habitat map sub-unit (see *Table 1* and *Methods* section below for more details).

In the proposed rule, we identified critical habitat in Sub-units 1C, 2A, 2B, 3A, and in portions of 5A and 5B. However, we have re-evaluated these sub-units based on updated information, and determined that, due to habitat modifications and ongoing operations and maintenance activities, these areas no longer contain one or more of the necessary PCE's for the Riverside fairy shrimp to successfully complete its life-cycle. We therefore removed the following areas from consideration for the final critical habitat designation:

(1) *Cruzan Mesa (Sub-unit 1C).* This sub-unit consisted of approximately 534 ac (216 ha). We have insufficient documentation regarding the occurrence or non-occurrence of the Riverside fairy shrimp in the Cruzan Mesa vernal pools, it occurs outside the known geographical range of the species, and we were unable to determine whether this area is essential to the conservation of this species. We therefore removed this sub-unit from our analyses of critical habitat.

(2) *Los Angeles International Airport (LAX; Sub-units 2A, 2B).* These sub-units consisted of approximately 103 ac (42 ha) in total. As a result of the ongoing operations and maintenance activities at LAX, these ephemeral wetlands cannot pond long enough for the Riverside fairy shrimp to complete its lifecycle. Thus, we have removed both proposed sub-units at LAX from critical habitat designation as they do not contain this primary constituent elements, and are thus not essential for the conservation of the Riverside fairy shrimp.

(3) *March ARB (Sub-unit 3A).* This sub-unit consisted of approximately 101 ac (41 ha). We have re-evaluated this sub-unit and determined to remove it

from this critical habitat designation as the vernal pool area has been modified and no longer contains the primary constituent elements for the Riverside fairy shrimp.

(4) *Southwestern and Southeastern Otay Mesa (portions of Sub-units 5A, 5B)*. These sub-units consisted of approximately 255 ac (104 ha) in total. Portions of these sub-units (totaling 119 ac (48 ha)) lie within the footprint of the BIS, which is completed or under construction by the DHS for use in their border patrol activities. After evaluation of these areas, we determined that the necessary PCE's for the Riverside fairy shrimp are absent; these areas have thus been removed from our critical habitat analyses. See discussion of *Units Excluded Due to National Security Under Section 4(b)(2) of the Act* below.

*Units Exempted Due to INRMPs Under Section 4(a)(3) of the Act*

(1) *MCB Camp Pendleton (Sub-units 4A, 4B)*. The total area of these proposed sub-units was approximately 254 ac (103 ha), and contains approximately 226 ac (91 ha) of essential habitat in the final rule. In the proposed rule, we excluded essential habitat within mission-critical training areas on MCB Camp Pendleton under section 4(b)(2) of the Act. In this final rule, we re-evaluated this exclusion and instead have exempted these mission-critical training areas as well as other essential habitat areas on MCB Camp Pendleton from critical habitat under section 4(a)(3) of the Act (see *Application of Section 4(a)(3) to MCB Camp Pendleton* for a detailed discussion). Thus, no lands owned or controlled by MCB Camp Pendleton have been designated as critical habitat in this final rule.

Lands leased to the California Department of Parks and Recreation have been excluded under section 4(b)(2) of the Act (see *Units Excluded Due to National Security Under Section 4(b)(2) of the Act*).

(2) *MCAS Miramar*. We reaffirm our exemption of MCAS Miramar under section 4(a)(3) of the Act.

*Units Excluded Due to National Security Under Section 4(b)(2) of the Act*

(2) *March ARB (Sub-unit 3B)*. This sub-unit consisted of approximately 44 ac (18 ha) of essential habitat. See *Application of Section 4(b)(2) National Security to March Air Reserve Base (March ARB)* for a detailed discussion. Thus, no lands owned or controlled by March ARB have been designated as critical habitat in this final rule.

(3) *Department of Homeland Security (DHS; Sub-unit 5B)*. We have excluded approximately 147 ac (59 ha) of

essential habitat within DHS-owned lands along the U.S.—Mexico border (see *Application of Section 4(b)(2) to Department of Homeland Security lands* for a detailed discussion). Thus, no lands owned by the DHS have been designated as critical habitat.

(1) *Lands near Christianitos Creek (Sub-unit 2H)*. This sub-unit consisted of approximately 47 (19 ha) of essential habitat on lands MCAS Camp Pendleton leased to the California Department of Parks and Recreation. We have excluded this sub-unit (see *Application of Section 4(b)(2) National Security to MCAS Camp Pendleton* for a detailed discussion).

*Exclusions Due to Economic Impacts Under Section 4(b)(2) of the Act*

In the proposed rule, we identified vernal pools in 6 sub-units for which we proposed critical habitat. In this final rule, we have conducted benefits analyses and under section 4(b)(2) of the Act and have determined not to designate critical habitat in these sub-units for economic impacts. By excluding these 6 units, some or all of the costs associated with a critical habitat designation in those areas will be avoided. This regards the following sub-units:

(1) *Former MCAS El Toro (Sub-unit 2C)*. The proposed area of this sub-unit was approximately 133 ac (54 ha), and contains approximately 14 ac (6 ha) of essential habitat in the final rule. We have excluded all of this sub-unit (see *Application of Section 4(b)(2) Economic Exclusion to lands on Former MCAS El Toro (Sub-unit 2C)* below for a detailed discussion).

(2) *Saddleback Meadows (northern portion of Sub-unit 2D)*. In the proposed rule, Sub-unit 2D consisted of approximately 736 ac (298 ha). We have excluded approximately 57 ac (23 ha) of essential habitat in the northern portion of sub-unit 2D that occurs within private lands owned by Saddleback Meadows Residential Development Project and other private landowners. See *Application of Section 4(b)(2) Economic Exclusion to Saddleback Meadows (portion of Sub-unit 2D)* below for a detailed discussion.

(3) *Tijeras Creek (Sub-unit 2E)*. The proposed area of this sub-unit was approximately 321 ac (130 ha), and contains approximately 101 ac (41 ha) of essential habitat in the final rule. We have excluded all of this sub-unit (see *Application of Section 4(b)(2) Economic Exclusion to lands near Tijeras Creek (Sub-unit 2E)* below for a detailed discussion).

(4) *Chiquita Ridge (Sub-unit 2F)*. The proposed area of this sub-unit was

approximately 489 ac (198 ha), and contains approximately 263 ac (106 ha) of essential habitat in the final rule. We have excluded all of this sub-unit (see *Application of Section 4(b)(2) Economic Exclusion to lands on Chiquita Ridge (Sub-unit 2F)* below for a detailed discussion).

(5) *Radio Tower Road (Sub-unit 2G)*. The proposed area of this sub-unit was approximately 736 ac (298 ha), and contains approximately 417 ac (169 ha) of essential habitat in the final rule. We have excluded all of this sub-unit (see *Application of Section 4(b)(2) Economic Exclusion to lands near Radio Tower Road (Sub-unit 2G)* below for a detailed discussion).

(6) *Southeastern Otay Mesa (Sub-unit 5C)*. The proposed area of this sub-unit was approximately 866 ac (350 ha), and contains approximately 111 ac (45 ha) of essential habitat in the final rule. We have excluded all of this sub-unit (see *Application of Section 4(b)(2) Economic Exclusion to Southeastern Otay Mesa (Sub-unit 5C)* below for a detailed discussion).

### Critical Habitat

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

Critical habitat receives protection under section 7 of the Act through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 requires consultation on Federal actions that are 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 government or public access to private lands.

To be included in a critical habitat designation, the habitat within the area occupied by the species must first have

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

Specific areas within the geographic area occupied by the species may be included in critical habitat only if the essential features thereon may require special management or protection. Thus, we do not include areas where existing management is sufficient to conserve the species. (As discussed below, such areas may also be excluded from critical habitat pursuant to section 4(b)(2).)

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

The Service's Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (59 FR 34271), and section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service, provide criteria, establish procedures, and provide guidance to ensure that decisions made by the Service represent the best scientific and commercial data available. They require Service biologists to the extent consistent with the Act and with the use of the best scientific and commercial data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas constitute critical habitat, a primary source of information is generally the listing documents for the species. Additional information sources include the recovery plan 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. All information is used in accordance with

the provisions of section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub.L. 106-554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, critical habitat designations do not signal that habitat outside the designation is unimportant or may not be required for recovery.

Areas that support populations, but are outside the critical habitat designation, will continue to be subject to conservation actions implemented under section 7(a)(1) of the Act and 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 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, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

#### Methods

As required by section 4(b)(2) of the Act and regulations at 50 CFR 424.12, we are to use the best scientific and commercial data available to determine areas that contain the physical and biological features that are essential to the conservation of the Riverside fairy shrimp. We have reviewed available information that pertains to the habitat requirements of this species. To accomplish this, we utilized data and information contained in, but not limited to, the final rule listing the Riverside fairy shrimp (58 FR 41384, the prior proposed and final rules designating critical habitat for the Riverside fairy shrimp (69 FR 23024, 65 FR 57136, 66 FR 29384), the proposed rule to designate critical habitat for the San Diego fairy shrimp (68 FR 19888), the Vernal Pools of Southern California Final Recovery Plan (Recovery Plan; Service 1998), research and survey

observations published in peer-reviewed scientific journals, maps from the regional Geographic Information System (GIS) database with vegetation and species coverages (including vegetation layers for Orange and San Diego counties), the California Natural Diversity Database (CNDDDB), the California Vernal Pool Assessment Preliminary Report (Keeler-Wolf *et al.* 1998), vernal pool mapping and other data collected for the development of HCPs, reports submitted by biologists holding section 10(a)(1)(A) recovery permits, biological assessments provided to us through section 7 consultations, reports from site investigations on MCB Camp Pendleton and MCAS Miramar, site visit reports by staff biologists, reports and documents on file in the Service's field offices, and communications with experts outside the Service who have extensive knowledge of vernal pool species and habitats. In addition, we used information contained in comments received by May 27, 2004 which were submitted on the proposed critical habitat designation (69 FR 23024) and comments received by November 18, 2004 submitted on the draft economic analysis (69 FR 61461).

Based on a compilation of information listed above on the known occurrences of Riverside fairy shrimp, we created maps indicating the habitat associated with each of the occurrences. The habitat units were delineated using ArcView (Environmental Systems Research Institute, Inc.), a computer GIS program to evaluate GIS data derived from a variety of Federal, State, and local agencies, and from private organizations and individuals. Data layers included current and historic species occurrence locations (CNDDDB 2002); we presumed occurrences identified in the database to be extant unless there was affirmative documentation that an occurrence had been extirpated. We also relied on unpublished species occurrence data contained within our files, including section 10(a)(1)(A) reports and biological assessments.

We then evaluated the areas defined by the overlap of the combined coverages (data layers) to initially focus on those areas which provide those physical and biological features essential to the conservation of the Riverside fairy shrimp; *i.e.*, we identified and mapped vernal pool basins and ephemeral wetlands supporting the Riverside fairy shrimp that contained the primary constituent elements for the species. The areas were further refined by using satellite imagery, aerial map coverages,



elevation modeling data, vegetation/land cover data, and agricultural/urban land use data to eliminate areas that contained features such as cultivated agriculture fields, housing developments, and other areas that are unlikely to contribute to the conservation of the Riverside fairy shrimp.

Next, the upslope areas, located immediately surrounding the vernal pool basins and ephemeral wetlands, areas that also contained the primary constituent elements for the Riverside fairy shrimp were mapped based on topographic features such as ridges, mima mounds, and elevational gradients or slopes. The boundaries for these areas were further refined and delineated by mapping those areas that sloped toward the pools, from highest point to highest point in the immediate surrounding upland areas, following the map's topographic elevational gradient around the high points (peaks), to the sides and the lowest part of the basin that encompassed the complex of vernal pools, keeping within the boundaries of the previously proposed critical habitat. Those areas that the topographic maps showed sloped steeply away from the pools, or that were developed or altered, such that necessary PCEs (*i.e.*, water, soil, minerals) could not be transported toward the vernal pools over such areas, were left outside the refined delineation. This method was used for vernal pools in both basin and mesa-type topographic settings.

The combined extent of these mapped areas was defined as the habitat essential to the survival and recovery of the Riverside fairy shrimp. Whenever possible, areas not containing the primary constituent elements, such as developed areas or open water, were not included as essential habitat. To aid us in this elimination, we used a finer mapping unit of 100 x 100 m. After creating GIS coverage of the essential areas, we described the boundaries of the essential areas using a 100 m grid to establish Universal Transverse Mercator (UTM) North American Datum 27 (NAD 27). The areas were then analyzed with respect to sections 4(a)(3), and 4(b)(2) of the Act, and any applicable and appropriate exclusions were made.

We eliminated areas because: (1) The area is highly degraded and may not be restorable or, (2) the area is small, highly fragmented, or isolated, and may provide little or no long-term conservation value. We also exempted areas under section 4(a)(3) and excluded areas under section 4(b)(2) of the Act for military, economic or other reasons where we concluded that such exclusions will not result in the

extinction of the Riverside fairy shrimp (see *Exclusion of Critical Habitat Under Sections 4(a)(3), 3(5)(A) and 4(b)(2) of the Act* below). The specific modifications are described in the Summary of Changes from the Proposed Rule section of this rule. The remaining essential areas are the final designation of critical habitat, presented as four geographically distinct habitat units. The essential areas, an elaboration on exclusions, and the specific areas designated as critical habitat are described below.

#### Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, in determining which areas to designate as critical habitat, we are required to base critical habitat determinations on the best scientific and commercial data available and to consider those physical and biological features (primary constituent elements (PCEs)) that are essential to the conservation of the species, and that may require special management considerations and protection. These include, but are not limited to: Space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Based on our current knowledge of the life history and ecology of the Riverside fairy shrimp, the requirements of the habitat to sustain the essential life history functions of the species, and the ecological and hydrologic functions of vernal pool complexes, as summarized above in the Background section, we have determined that the Riverside fairy shrimp has several primary constituent elements, or PCEs. Its two most significant PCEs are: (1) Vernal pools, swales, and other ephemeral wetland features of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for the Riverside fairy shrimp to complete their life cycle; and (2) the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of immediately surrounding upslope areas that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of

the vernal pool, maintain suitable periods of pool inundation, and maintain water and nutrient quality and soil moisture to enable the Riverside fairy shrimp to carry out their lifecycle.

#### 1. Primary Constituent Element: Vernal Pools, Swales, Other Ephemeral Wetland Features

Vernal pools provide for space, physiological requirements, shelter, and reproduction sites for the Riverside fairy shrimp. Vernal pools provide the necessary soil moisture and aquatic environment required for cyst hatching, growth, maturation, reproduction, and dispersal, and the appropriate periods of dry-down for seed and cyst dormancy, as well as for seed germination of plant species found in the pool that contribute organic matter and dissolved gasses to the water. Both the wet and dry phases of the vernal pool help to reduce competition with strictly terrestrial or strictly aquatic plant or animal species. The wet phase provides the necessary cues for hatching, germination, and growth, while the drying phase allows the vernal pool plants to flower and produce seeds and the vernal pool crustaceans to mature and produce cysts. We conclude this element is essential to the conservation of the Riverside fairy shrimp because this species is ecologically dependent on seasonal fluctuations, such as absence or presence of water during specific times of the year, and duration of inundation and the rate of drying of their habitats. The Riverside fairy shrimp cannot persist in perennial wetlands or wetlands that are inundated for the majority of the year, nor can they persist without periodic seasonal inundation.

Vernal pools and other ephemeral wetlands provide space during their wetted periods for individual and population growth and normal behavior of vernal pool species by providing still, freshwater habitat of appropriate depth, duration, temperature, and chemical characteristics for juvenile and adult vernal pool crustaceans to hatch, swim, grow, reproduce and behave normally. Vernal pools and other ephemeral wetlands also provide soil space during both dry and wetted periods for the maintenance of dormant cyst and seed banks, which allow populations of vernal pool species to maintain themselves throughout the unpredictable and highly variable environmental conditions experienced by their active, non-dormant life history stages. Vernal pools and other ephemeral wetlands also provide various physiological requirements for both vernal pool plants and crustaceans.

For crustaceans they provide water, oxygen, and food such as plankton, detritus, and rotifers. By drying seasonally, ephemeral wetlands provide cover or shelter from many aquatic predators and competitors. Similarly, by undergoing seasonal inundation, these areas provide shelter for vernal pool species from invading species which would otherwise out-compete them for space, light, water, or nutrients. Finally, vernal pool crustaceans require wetted ephemeral wetlands in which to mate, and both vernal pool crustaceans and vernal pool plants deposit cysts or eggs in these wetland areas, which must then dry to allow hatching or germination. Wetted ephemeral wetlands may also tend to attract waterfowl, which act as important seed and cyst dispersers (Proctor 1965; Silveira 1998).

*2. Primary Constituent Element: Geographic, Topographic, and Edaphic Features That Support Aggregations of Hydrologically Interconnected Pools, Swales, and Other Ephemeral Wetlands*

The second PCE (the entire vernal pool complex, including the pools, swales, and associated upslope areas) is essential to maintain both the aquatic phase and the drying phase of the vernal pool habitat. Although the Riverside fairy shrimp does not occur in the strictly upslope areas surrounding vernal pools, they are critically dependent on these upland areas to maintain the seasonal cycle of ponding and drying in the ephemeral wetland areas. The hatching of cysts (and the germination of vernal pool plants) is dependent on the timing and length of inundation of the vernal pool habitat. The rate of vernal pool drying, which greatly influences the water chemistry, in turn directly affecting the life cycle of the Riverside fairy shrimp, is also largely controlled by interactions between the vernal pool and the surrounding uplands (Hanes *et al.* 1990; Hanes and Stromberg 1998). Soil morphology at the pool basin and on the upslope areas provides the pool with an impermeable surface or subsurface layer, accumulation of organic matter, and a unique assemblage of nutrient availability; in fact, biotic and reduction-oxidation (redox) interactions in the soil control the turnover of nutrients in the pool (Hobson and Dahlgren 1998). Thus, the biogeochemical environment strongly influences hydrologic properties and play a critical role in nutrient cycling in vernal pool ecosystems (Hobson and Dahlgren 1998). Additionally, upslope areas provide an important (and often primary) source of detritus, which is a major food source for vernal pool

crustaceans and nutrient source for vernal pool plants. Certain upland and swale areas may also provide for population growth by channeling flood waters from overflowing ephemeral wetland areas so that seeds, cysts, or adult individuals are washed from one such wetland to another. The upslope areas provide habitat for avian species and other animals known to aide in the dispersal of vernal pool species (Zedler and Black 1992; Silveira 1998). The surrounding upslope and swale areas also provide habitat for pollinator species that may be specifically adapted to some of the vernal pool plant species (Thorp 1998; Eriksen and Belk 1999), as well as habitat for waterfowl, amphibians, mammals, or insects, all of which are important for dispersal of cysts (and seeds, pollen of vernal pool flora).

The upslope areas immediately surrounding vernal pools are therefore essential for providing the same physical and biological factors as are provided by the vernal pools or ephemeral wetland areas. We have used vernal pool complexes as the basis for determining populations of vernal pool crustaceans since the species were first proposed for listing. The genetic characteristics of fairy shrimp, as well as ecological conditions, such as watershed contiguity, indicate that populations of these animals are defined by pool complexes rather than by individual vernal pools (cf. Fugate 1992, 1998; King 1996). Therefore, the most accurate indication of the distribution and abundance of the Riverside fairy shrimp is the number of inhabited vernal pool complexes. Individual vernal pools occupied by the Riverside fairy shrimp are most appropriately referred to as "sub-populations" (59 FR 48136).

Our use of vernal pool complexes to define populations of the four listed crustaceans was upheld by the U.S. District Court in post-listing challenge to the listing (*Building Industry Association of Superior California et al. v. Babbitt et al.*, CIV 95-0726 PLF). The July 25, 1997, court decision stated that the plaintiffs were on notice that the Service would consider vernal pool complexes as a basis for determining fairy shrimp populations. The court also concluded that the use of this methodology was neither arbitrary nor capricious. The Court of Appeals for the D.C. Circuit upheld the district court's decision, and the Supreme Court has declined to hear the case. Each of the critical habitat units likely includes some areas that are unoccupied by the vernal pool crustaceans. "Unoccupied" is defined here as an area that contains

no hatched vernal pool crustaceans, and that is unlikely to contain a viable cyst or seed bank. Determining the specific areas that the vernal pool crustaceans occupy is difficult (see *Background*). Depending on climatic factors and other natural variations in habitat conditions, the size of the localized area in which hatched crustaceans appear may fluctuate dramatically from one year to another. In some years, individuals may be observed throughout a large area, and in other years they may be observed in a smaller area or not at all. Because it is logistically difficult to determine how extensive the cyst or seed bank is at any particular site, and because hatched Riverside fairy shrimp may or may not be present in all vernal pools within a site every year, we cannot quantify in any meaningful way what proportion of each critical habitat unit may actually be occupied by the vernal pool crustaceans. Therefore, small areas of currently unoccupied habitat are probably interspersed with areas of occupied habitat in each unit. The inclusion of unoccupied habitat in our critical habitat units reflects the dynamic nature of the habitat and the life history characteristics of the Riverside fairy shrimp. Unoccupied areas provide areas into which populations might expand, provide connectivity or linkage between groups of organisms within a unit, and support populations of vernal pool plant pollinators and cyst dispersal organisms. Both occupied and unoccupied areas that are designated as critical habitat are essential to the conservation of the Riverside fairy shrimp. All of the above described PCEs do not have to occur simultaneously within a unit for that unit to constitute critical habitat for the Riverside fairy shrimp.

*3. Water Chemistry and Physiological Requirements*

Temperature, water chemistry, and length of time vernal pools are inundated with water are important factors that effect and potentially limit the distribution of the Riverside fairy shrimp. The water in the pools that support Riverside fairy shrimp typically is dilute with (1) low to moderate total dissolved solids (mean 77 milligrams per liter (mg/l) or parts per million (ppm)), (2) low to moderate salinity, (3) low levels of alkalinity (mean 65 mg/l), and (4) water pH at neutral or just below (6.4-7.1; Eng *et al.* 1990; Gonzalez *et al.* 1996; Eriksen and Belk 1999). Riverside fairy shrimp can tightly regulate their internal body chemistry in pool environments with varying salinity and alkalinity (Gonzalez *et al.* 1996). In a

laboratory experiment, Riverside fairy shrimp could maintain their internal levels of salt concentration ( $\text{Na}^+$ ) fairly constant over a wide range of external concentrations (0.5–60  $\text{mmol/l}^3$ ), but they were sensitive to the extremes, with 100 percent mortality occurring at 100  $\text{mmol/l}^3$  (2,300  $\text{mg/l}^3$ ; Gonzalez *et al.* 1996). Although the species could maintain their internal levels of salt concentration fairly constant over a wide range of external concentrations (0.5–60  $\text{mmol/l}^3$ ), Riverside fairy shrimp could not survive in laboratory environments where external alkalinity was higher than 800 to 1,000  $\text{mg/l HCO}_3^-$ .

The Riverside fairy shrimp is found in water temperatures ranging between 50 and 77 degrees F (10 and 25 degrees C; Hathaway and Simovich 1996). Importantly, studies show that the Riverside fairy shrimp is sensitive to water temperature (Hathaway and Simovich 1996). After pool inundation, hatching occurred significantly more rapidly (mean 7 days) when the temperature was cooler and fluctuated within a range of 41–77 degrees F (5–25 degrees C), and most slowly (mean 25 days) with steady warm temperature of 77 degrees F (25 degrees C). Furthermore, at cooler fluctuating temperatures (41–59 degrees F (5–15 degrees C)), the highest proportion of cysts hatched, over 15 percent, while fewest cysts hatched (1–3 percent) at a steady higher temperature of 77 degrees F (25 degrees C). In fact, the proportion of cysts hatching after exposure to a (5–15 C) fluctuating temperature range regime far exceeded that reached at steady temperature, with cysts exposed to any steady temperature above 50 (10 degrees C) showing almost no hatching success (Hathaway and Simovich 1996). Water within pools supporting fairy shrimp may be clear, but more commonly it is moderately turbid (Eriksen and Belk 1999).

#### 4. Sites for Breeding, Reproduction and Rearing of Offspring

The Riverside fairy shrimp is restricted to a small sub-set of long-lasting vernal pools and ephemeral wetlands in southern California because this animal takes approximately two months to mature and reproduce (Hathaway and Simovich 1996). In contrast, the San Diego fairy shrimp, another federally endangered fairy shrimp species found in southern California, can mature and reproduce in less than one month. Most vernal pools in southern California do not pool for a sufficient amount of time to support the Riverside fairy shrimp. Pools that contain Riverside fairy shrimp usually

accumulate water to a depth greater than 10 in (25 cm) and some pools that support this species fill to a depth of 5 to 10 ft (1.5–3 m). In the years that Riverside fairy shrimp successfully reproduce, pools fill for 2 to 3 months and some pools have been reported to remain filled for up to 7 months. Riverside fairy shrimp can survive as cysts for multiple years; therefore, it is not necessary for ideal conditions to exist every year for this species to persist.

#### 5. Disturbance, Protection, and the Historical Geographical Distributions

The majority of sites currently supporting the Riverside fairy shrimp have experienced disturbance, some more recently than others and some to a greater extent than others. The pools that support Riverside fairy shrimp are generally found in flat or moderately sloping areas. Many of the pools are on gently sloping areas near the coast, and in grassland habitats. These areas, located in a region of current explosive urban expansion, are easily assessable and amenable to construction. Thus a major factor contributing to the decline of vernal pool species, including the Riverside fairy shrimp, is mortality and habitat elimination through human construction and development of vernal pool areas for a wide variety of purposes. Additionally, vernal pool areas have been vulnerable to agriculture, cattle grazing, and off-road vehicle activities. Many of the pools that currently support Riverside fairy shrimp have been artificially deepened in the past by ranchers to provide water for stock animals (Hathaway and Simovich 1996). This species has only been studied since the late 1980s; therefore, the extent of its historical distribution is not well understood. Current estimates suggest that 90 to 97 percent of vernal pool habitat has been lost in southern California (Mattoni and Longcore 1997; Bauder and McMillan 1998; Keeler-Wolf *et al.* 1998; Service 1998). The conservation of the few remaining occurrences of Riverside fairy shrimp is essential for its conservation (Service 1998).

#### 6. Summary of PCEs Essential to the Conservation of the Riverside Fairy Shrimp

Pursuant to our regulations, we are required to identify the known physical and biological features, *i.e.*, primary constituent elements, essential to the conservation of the Riverside fairy shrimp, together with a description of any critical habitat that is proposed. In identifying the primary constituent elements, we used the best available

scientific and commercial data available. The three main primary constituent elements determined essential to the conservation of Riverside fairy shrimp must have the following characteristics.

A. The first PCE, small to large pools or pool complexes, must have the appropriate size and volume, local climate, topography, water temperature, water chemistry, soil conditions, and length of time of inundation with water necessary for Riverside fairy shrimp incubation and reproduction, as well as dry periods necessary to provide the conditions to maintain a dormant and viable cyst bank. Specifically, the vernal pool conditions necessary to allow for successful reproduction of Riverside fairy shrimp fall within the following ranges:

- i. Moderate to deep depths ranging from 10 in (25 cm) to 5–10 ft (1.5–3 m),
- ii. Ponding inundation lasting for a minimum length of 2 months up to 5–8 months or more, *i.e.*, a sufficient wet period in winter and spring months to allow the Riverside fairy shrimp to hatch, mature, and reproduce, followed by a dry period prior to the next winter and spring rains,
- iii. Water temperature that falls within the range of 41 and 77 degrees F (5 and 25 degrees C),
- iv. Water chemistry with low total dissolved solids and alkalinity (means of 77 and 65 parts per million, respectively), and
- v. Water pH within a range of 6.4–7.1.

B. The second PCE, the immediately surrounding upslope areas, must provide:

- i. Hydrologic flow to fill the pools and maintain the seasonal cycle of ponding and drying, at the appropriate rates,
- ii. A source of detritus and nutrients,
- iii. A source of soil and mineral transport to maintain the appropriate water chemistry and impermeability of the pool basin, and
- iv. Habitat for animals that act as dispersers of cysts and vernal pool plant seeds or pollen.

The size of the immediately surrounding upslope areas varies greatly and cannot be generalized and has been assessed for each sub-unit. Factors that affect the size of the surrounding upslope area include surface and underground hydrology, the topography of the area surrounding the pool or pools, the vegetative coverage, and the soil substrate in the area. Watershed sizes designated vary from a few acres to greater than 100 ac (40 ha).

C. The third PCE, the soils in the summit, rim and basin geomorphic positions, must have a clay component and/or an impermeable surface or

subsurface layer, and must provide a unique assemblage of available nutrients and redox conditions known to support vernal pool habitat. The biogeochemical environment strongly influences hydrologic properties and play a critical role in nutrient cycling in vernal pool ecosystems (Hobson and Dahlgren 1998).

#### Criteria Used To Identify Critical Habitat

Based on the best scientific information available, we are designating as critical habitat lands that are essential to the conservation of the Riverside fairy shrimp and contain the PCEs identified above and require special management considerations or protection. Both individual vernal pools and vernal pool complexes are essential for conservation of the Riverside fairy shrimp because of the limited numbers of remaining vernal pools and their highly localized distribution (cf. Gilpin and Soulé 1986; Lesica and Allendorf 1995; Lande 1999).

Areas essential to the conservation of the species are those that are necessary to advance at least one of the following conservation criteria: (1) The conservation of areas representative of the geographic distribution of the species. Species that are protected across their ranges have lower chances of extinction (Soulé and Simberloff 1986; Murphy *et al.* 1990; Primack 1993; Given 1994; Hunter 1996; Pavlik 1996; Noss *et al.* 1999; Grosberg 2002). Maintenance of representative occurrences of the species throughout its geographic range helps ensure the conservation of regional adaptive differences and makes the species less susceptible to environmental variation or negative impacts associated with human disturbances or natural catastrophic events across the species' entire range at any one time (Primack 1993; New 1995; Hunter 1996; Helm 1998; Redford and Richter 1999; Rossum *et al.* 2001; Grosberg 2002). Additionally, the conservation of the geographic distribution of the species is one of the physical and biological features we are required to consider under our regulations (50 CFR 424.13(b)). Accordingly, we considered the number of occupied areas in each vernal pool region, and determined whether each occupied area is essential to the conservation of the species in the region or as a whole.

(2) The conservation of areas representative of the ecological distribution of the Riverside fairy shrimp. Each of the critical habitat units is associated with various combinations of soil types, vernal pool chemistry,

geomorphic surfaces (landforms), and vegetation community associations. Maintaining the full range of varying habitat types and characteristics for a species is essential because it would encompass the full extent of the physical and environmental conditions necessary for the species (Zedler and Ebert 1979; Ikeda and Schlising 1990; Fugate 1992; Gonzales *et al.* 1996; Fugate 1998; Platenkamp 1998; Bainbridge 2002; Noss *et al.* 2002a). Vernal pool species are extremely adapted to the physical and chemical characteristics of the habitat in which they occur. Additionally, the conservation of the ecological distribution of the species is one of the physical and biological features we are required to consider under our regulations 50 CFR 424.13(b), and was also strongly endorsed by several peer reviewers (*see* Peer Review section). Accordingly, we considered the extent to which habitat types occupied by the species could be conserved in light of the number of occupied areas and the threats involved.

(3) The conservation of areas necessary to allow movement of cysts between areas representative of the geographic and ecological distribution of the species. As a result of dispersal events within and between vernal pool complexes, and environmental conditions that may prevent the emergence of dormant cysts for up to several decades, the presence of vernal pool species is dynamic in both space and time (Eriksen and Belk 1999; Noss *et al.* 2002a). We therefore determined that essential habitat for the Riverside fairy shrimp must provide for movement within and between vernal pool complexes to provide for the varying nature and expression of the species, and also allow for gene flow and dispersal and habitat availability that accommodate natural processes of local extirpation and colonization over time (Stacey and Taper 1992; Falk *et al.* 1996; Davies *et al.* 1997; Husband and Barrett 1998; Holt and Keitt 2000; Keymer *et al.* 2000; Donaldson *et al.* 2002).

We therefore selected vernal pool complexes occupied by the Riverside fairy shrimp in a distribution sufficient to ensure the known geographic range, geographical isolation, and likely genetic diversity of the species. Map Unit 1 represents the northern extreme of the distribution and Map Unit 4 represents the southern extreme of the distribution. Each of these isolated occurrences is greater than 10 mi (16 km) from other known Riverside fairy shrimp locations. We also selected vernal pools occupied by Riverside fairy

shrimp to ensure that the density and localized distribution of vernal pools occurs within a variety of different habitat types. Map Unit 2 represents the last known vernal pools in Orange County, and they are within 5 mi (8 km) of each other and include pool habitats not associated with mima mound vernal pools complexes.

Section 10(a)(1)(B) of the Act authorizes us to issue permits for the take of listed species incidental to otherwise lawful activities. An incidental take permit application must be supported by a habitat conservation plan (HCP) that identifies conservation measures that the permittee agrees to implement for the species to minimize and mitigate the impacts of the requested incidental take. We often exclude non-Federal public lands and private lands that are covered by an existing operative HCP and executed implementation agreement under section 10(a)(1)(B) of the Act from designated critical habitat because the benefits of exclusion outweigh the benefits of inclusion as discussed in section 4(b)(2) of the Act.

When defining critical habitat boundaries, we made every effort to exclude all developed areas, such as buildings, paved areas, and other lands unlikely to contain primary constituent elements essential for the Riverside fairy shrimp conservation. Any such structures remaining inside of final critical habitat boundaries are not considered part of the units. This also applies to the lands directly on which such structures lie. A brief discussion of each area designated as critical habitat is provided in the unit descriptions below. Additional detailed documentation concerning the essential nature of these areas is contained in our supporting record for this rulemaking.

#### Special Management Considerations or Protections

When designating critical habitat, we assess whether the areas determined to be essential for conservation may require special management considerations or protections. As we undertake the process of designating critical habitat for a species, we first evaluate lands defined by those physical and biological features essential to the conservation of the species for inclusion in the designation pursuant to section 3(5)(A) of the Act. Secondly, we evaluate lands defined by those features to assess whether they may require special management considerations or protection.

The areas designated as critical habitat in this final rule face ongoing threats that will require special

management considerations or protection. These threats are common to all of the areas designated as critical habitat. The threats that require special management considerations or protection are vernal pool elimination due to destruction and development, alterations made to the hydrologic or soil regime of the vernal pools and their associated upslope areas; disturbance to the claypan and hardpan soils within the vernal pools, disturbance or destruction of the vernal pool flora; and the invasion of exotic plant and animal species into the vernal pool basin. Habitat loss continues to be the greatest direct threat to Riverside fairy shrimp.

Changes in hydrology which 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. 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 thus its water quality and chemistry, which in turn can make these primary constituent elements 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 upslope areas. Impacts to the hydrology of vernal pools can be managed through avoidance of such activities in and

around the pools and the associated surrounding upslope areas.

Disturbance to the impermeable layer of claypan and hardpan soils within vernal pools occupied by the Riverside fairy shrimp 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, agricultural disking, drilling, or creation of berms that obstruct the natural hydrological surface or sub-surface flow of water run-off and precipitation. These impacts can be reduced by avoidance of vernal pools.

Invasive plant and animal species may alter the ponding inundation and water temperature by changing the evaporation rate and shading of standing water in vernal pools. Invasive plant species, such as brass-buttons (*Cotula coronopifolia*) and Pacific bentgrass (*Agrostis avenaceae*), compete with native vernal plant species and may alter the primary constituent elements in these vernal pools. Invasive plants need to be removed and managed to maintain the primary constituent elements needed by the Riverside fairy shrimp in a manner consistent with the conservation of native vernal pool plants.

#### Critical Habitat Designation

We are designating four units (5 sub-units) as critical habitat for the Riverside fairy shrimp. The critical

habitat areas described below constitute our best assessment at this time of the areas essential for the conservation and provide one or more of the primary constituent elements essential to the species of the Riverside fairy shrimp, and that may require special management. The four map units designated as critical habitat include Riverside fairy shrimp habitat within the species' range in the United States, and are referred to by the following geographic names: (Map Unit 1) Ventura County, (Map Unit 2) Orange County, (Map Unit 3) North San Diego County coastal area, and (Map Unit 4) South San Diego County, Otay Mesa. An overview of the regional units that are designated as critical habitat in this final rule, with the proposed and final sub-unit sizes, are shown in Table 1. Other lands have not been designated critical habitat for the Riverside fairy shrimp because they do not meet the definition of critical habitat under section 3(5)(A), or, although essential, have been exempted under section 4(a)(3) and excluded under section 4(b)(2) of the Act (see Table 2). For a summary of the approximate total critical habitat area designated by county and land ownership, and a summary of the areas of land encompassed by HCPs and NCCPs, see Tables 3 and 4.

Critical habitat units and areas designated for the Riverside fairy shrimp. Also shown are proposed units which were exempted or excluded from the final designation.

TABLE 1

Critical Habitat Unit	Sub-unit number: proposed rule	Ac (ha) proposed rule (April 28, 2004)	Essential habitat Ac (ha) final rule	Designated Ac (ha) final rule
Ventura County, land in City of Moorpark Greenbelt, north Tierra Rejada Valley .....	1A	74 (30)	47 (19)	47 (19)
Ventura County, land south Tierra Rejada Valley .....	1B	437 (177)	185 (75)	185 (75)
Ventura County, land on Cruzan Mesa .....	1C	534 (216)	0	0
Los Angeles County, Los Angeles Basin—Orange Management Area, land at LAX .....	2A	103 (42)	0	0
	2B			
Orange County, land within former MCAS El Toro .....	2C	133 (54)	14 (6)	0
Orange County, land near O'Neill Regional Park .....	2D	736 (298)	49 (20)	49 (20)
Orange County, land near Tijeras, Mission Viejo .....	2E	321 (130)	101 (41)	0
Orange County, Rancho Mission Viejo, land on Chiquita Ridge .....	2F	489 (198)	263 (106)	0
Orange County, Rancho Mission Viejo, land near Radio Tower Road .....	2G	736 (298)	417 (169)	0
North San Diego County, State-leased land, Christianitos Creek foothills .....	2H	566 (229)	47 (19)	0
Riverside County, lands on March ARB .....	3A	44 (18)	101 (41)	0
	3B	101 (41)		
North coastal San Diego County, land on MCB Camp Pendleton .....	4A	254 (103)	226 (91)	0
	4B			
North coastal San Diego County, Carlsbad HCP, land near Poinsettia Lane Commuter Station.	4C	143 (58)	22 (9)	22 (9)
South San Diego County, land on western Otay Mesa Sweetwater Union High School District lands.	5A	61 (25)	3 (1)	3 (1)
South San Diego County, southwestern Otay Mesa, federal lands adjacent to the U.S.—Mexico border.	5B	194 (79)	147 (59)	0
South San Diego County, southeastern Otay Mesa, land adjacent to the U.S.—Mexico border.	5C	866 (350)	111 (45)	0

TABLE 1—Continued

Critical Habitat Unit	Sub-unit number: proposed rule	Ac (ha) proposed rule (April 28, 2004)	Essential habitat Ac (ha) final rule	Designated Ac (ha) final rule
Total area designated in final rule .....				306 (124)

Total size of areas designated as critical habitat or as essential to the conservation of the Riverside fairy shrimp, and areas excluded from the final designation.

TABLE 2

Area determined to be essential to the conservation of the Riverside fairy shrimp .....	13,913 ac (5,630 ha)
Essential area exempted pursuant to section 4(a)(3) of the Act due to an INRMP that benefits Riverside fairy shrimp: San Diego County, MCAS Miramar and MCB Camp Pendleton (Sub-units 4A and 4B).	3,053 ac (1,236 ha)
Essential area excluded pursuant to section 4(b)(2) of the Act: Completed and pending HCPs in San Diego MSCP, Orange County Central-Coastal NCCP and Western Riverside County MSHCP: Northern San Diego County, Carlsbad HCP (portion of Sub-unit 3A).	9,354 ac (3,785 ha)
Essential area excluded pursuant to section 4(b)(2) of the Act: Impacts to national security on Department of Defense lands: Riverside County, March Air Reserve Base (Sub-unit 3B); San Diego County (Otay Mesa Sub-unit 5B; portion of Sub-unit 5C); San Onofre State Park.	295 ac (119 ha)
Essential area excluded pursuant to section 4(b)(2) of the Act: Impacts to Economy on privately-owned lands within Sub-units 2C (former MCAS El Toro), 2D (Saddleback Meadows portion), 2E (Tijeras Creek), 2F (Chiquita Ridge), 2G (Radio Tower Road), 5C (Southeastern Otay Mesa).	295 (119)
Designated Critical Habitat .....	306 ac (124 ha)

Approximate designated critical habitat area (ha (ac)) by County and land ownership. Estimates reflect the total area within critical habitat unit boundaries.

TABLE 3

County	Federal*	Local/State	Private	Total
Ventura .....	0 ac	0 ac	232 ac (94 ha)	232 ac (94 ha)
Orange .....	0 ac	39 ac (16 ha)	10 ac (4 ha)	49 ac (20 ha)
San Diego .....	0 ac	25 ac (10 ha)	0 ac	25 ac (10 ha)
Total .....	0 ac	64 ac (26 ha)	242 ac (98 ha)	306 ac (124 ha)

\* Federal lands include Department of Defense, U.S. Forest Service, and other Federal land.

Habitat Conservation Plans (HCPs) and Natural Communities Conservation Program (NCCP) areas within the general area of the designated critical habitat.

TABLE 4

NCCP/HCP	Planning area	Preserve area
San Diego Multiple Species Conservation Program (MSCP) .....	582,000 ac (236,000 ha)	171,000 ac (69,573 ha)
Central-Coastal Orange County NCCP/HCP .....	208,713 ac (84,463 ha)	38,738 ac (15,677 ha)
Proposed Northwestern San Diego Multiple Habitat Conservation Program (MHCP) .....	111,908 ac (45,287 ha)	19,928 ac (8,064 ha)
Proposed Southern Sub-region NCCP/HCP Orange County .....	128,000 ac (51,800 ha)	14,000 ac (5,666 ha)
Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) .....	1,260,000 ac (510,000 ha)	153,000 ac (61,919 ha)

The critical habitat unit names are based on the county where the vernal pool complexes occur and their geographic location. For the map sub-units, we used the names for the vernal pool complexes that are commonly given in survey reports or development proposals. These various identifiers allow the public to locate the units in the context of past vernal pool mapping efforts. Past mapping may not correspond to current boundaries of critical habitat. Areas proposed for designation are divided into four different units; we present brief descriptions of all units, and reasons why they are essential for the conservation of the Riverside fairy shrimp, below.

*Final Unit 1: Tierra Rejada Valley Critical Habitat*

Unit 1 contains approximately 1,045 acres. Its habitat sub-regions include Carlsberg Ranch in Ventura County and Cruzan Mesa in Los Angeles County. One portion of the Carlsberg Ranch sub-region, on the edge of the city of Moorpark, has already been largely developed by Lennar Homes. The southeastern portion, Tierra Rajada, lies between the cities of Thousand Oaks and Simi Valley, with a substantial portion falling in Ventura County lands. Cruzan Mesa is on the northeastern edge of the City of Santa Clarita, and contains a residential development by Pardee Homes. Unit 1 represents that northernmost habitat of the RFS habitat.

The vernal pools in this unit (220 ac (89 ha)) lie within the Transverse Range Management Area. Sub-units 1A and 1B occur in the Tierra Rajada Valley in Ventura County, California (220 ac (89 ha)), and represent the currently known northern limit of occupied habitat for the Riverside fairy shrimp and are among the last remaining vernal pools in Ventura County known to support this species. The areas that are designated as critical habitat in Unit 1 provide the primary constituent elements that support the Riverside fairy shrimp as described above, relating to the pooling basins, watersheds, underlying soil substrate and topography. These lands are considered essential to the conservation of the Riverside fairy shrimp.

The Tierra Rajada Valley Critical Habitat Unit has two sub-units located on either side of the Tierra Rajada Valley basin, near the city of Moorpark, west of Simi in Ventura County. The northern Sub-unit 1A includes portions of land within the City of Moorpark, within the City's designated "Area of Interest" in the Terra Rajada Greenbelt zone. Thus, this sub-unit lies within an

area of land with a formal agreement by the Cities of Moorpark, Thousand Oaks, and Simi Valley, and County of Ventura to be preserved for open space and agricultural uses. Sub-unit 1A contains a large vernal pool in land that was formerly the Carlsberg Ranch. Development has occurred adjacent to this vernal pool, but it is now protected from future development. This pool has been surveyed numerous times, and is characterized as excellent, with 5–10,000 Riverside fairy shrimp recorded within (CNDDDB 1998). Sub-unit 1B is located less than a mile to the south, just across the Tierra Rajada valley basin. This sub-unit has not been surveyed for Riverside fairy shrimp; a number of factors strongly suggest it is likely to occur there, including:

(a) The biotic and abiotic conditions of the sub-unit (*i.e.*, its soil type, geology, morphology, local climate, topography, and occurrence of local vernal pool vegetation, such as California orcutt grass (*Orcuttia californica*)),

(b) The topographic conditions of the sub-unit, which are ideally suited to collect water at the basin center,

(c) The fact that the sub-unit contains several large permanent and semi-permanent pools within its basin,

(d) The fact that the sub-unit is located less than 1 mi (1,500 m) from essential habitat where Riverside fairy shrimp occurrence is known and documented. Because this distance is less than distances between other known occurrences of Riverside fairy shrimp within the same pool complex, which can occur as much as 1.1–1.9 mi (2,000–3,000 m) apart, this pool complex is within the dispersal distance for this species,

(e) The two sub-units are adjoined, on opposite sides, to a large river basin passing between (the Tierra Rejada Valley river system) which may have historically connected the two pools, or dispersed cysts between the two sub-units.

This 74 ha (184 ac) sub-unit contains the primary constituent elements for Riverside fairy shrimp, and is considered essential habitat for the species. The above factors strongly support the likelihood of the species occurring there. This area is currently in private ownership and we are unaware of any plans to develop this site. The preservation and management of vernal pools in both sub-units in the Transverse Range Management Area are also described by the Recovery Plan as essential for the conservation of the Riverside fairy shrimp.

The occurrences of Riverside fairy shrimp in northern Los Angeles County

and in Ventura County (Unit 1 and proposed Sub-units 2A, 2B) represent isolated occurrences at the northernmost extent of the Riverside fairy shrimp's known range. Recent scientific research on desert fishes, a species group similar to the fairy shrimp group in that it is non-mobile and restricted within narrow habitat limits, has found that the risk of extinction among the populations was more closely correlated to range fragmentation than to the number of occurrences (Fagan *et al.* 2004). This emphasizes the importance of protecting populations of the Riverside fairy shrimp throughout as much of its known range as possible, to minimize range fragmentation and thus obtain maximal conservation efficiency.

Conservation biologists have demonstrated that populations at the edge of a species' distribution can be important sources of genetic variation and represent the best opportunity for colonization or re-colonization of unoccupied essential areas and, thus, for the species' long-term conservation (Gilpin and Soulé 1986; Lande 1999). These outlying populations may be genetically divergent from populations in the center of the range and, therefore, may have genetic characteristics that would allow adaptation in the face of environmental change. Such characteristics may not be present in other parts of the species' range (Lesica and Allendorf 1995). Research on the San Diego fairy shrimp has shown that geographically distinct populations in various vernal pools are also genetically distinct from each other, to the extent that individuals within populations may be identified at the individual vernal pool complex level based on their genetic make-up (Bohonak 2003). This is likely to be also true of the Riverside fairy shrimp (Bohonak pers. comm.). The preservation of genetic diversity can greatly aid future conservation and recovery efforts of the species populations throughout its range, as well as provide insight into the evolutionary history of a species. For all of these reasons, the lands identified in Unit 1 are essential for the conservation of the Riverside fairy shrimp.

*Proposed Unit 2/Final Unit 2: Los Angeles Basin—Orange Management Area Critical Habitat*

In the proposed rule, this unit was comprised of the Los Angeles Basin—Orange Management Area, Los Angeles and Orange Counties, California (3,180 ac (1,287 ha)). This area encompassed two distinct regions where Riverside fairy shrimp are known to occur: in vernal pools in coastal Los Angeles



County, and in vernal pools and vernal pool-like ephemeral ponds located along the foothills of Orange County. These pools are found at the former MCAS El Toro, O'Neill Regional Park which is east of Tijeras Creek at the intersection of Antonio Parkway and the FTC-north segment, and in Rancho Mission Viejo upon Chiquita Ridge and in the Radio Tower Road area, and on lands leased to the California Department of Parks and Recreation by Camp Pendleton. These vernal pools are the last remaining vernal pools in Orange County known to support this species (58 FR 41384). These pools represent a unique type of vernal pool habitat much different from the traditional mimia mound vernal pool complexes. They are also different from coastal pools at MCB Camp Pendleton and the inland pools of Riverside County. The Orange County vernal pool habitat and essential associated watershed represent the majority of Riverside fairy shrimp habitat within the Los Angeles Basin—Orange Management Area discussed in the Recovery Plan. The ephemeral pond on the former MCAS El Toro is within the boundary of the Central—Coastal HCP planning area. With the exception of a portion of habitat on Sub-unit 2D (lands within O'Neill Regional Park), critical habitat for the Riverside fairy shrimp has been excluded under section 4(b)(2) of the Act.

In the southern end of proposed Sub-unit 2D lies O'Neill Regional Park, in the vicinity of Trabuco Canyon, where we have determined to designate approximately 49 ac (20 ha) of habitat considered essential to the conservation of the Riverside fairy shrimp (*Final Unit 2*). This portion of the sub-unit lies at 1,413 ft (431 m), the highest elevation of the occurrences of Riverside fairy shrimp considered in this designation. The habitat consists of several vernal pools surrounded by grassland and coastal sage scrub, and may represent a unique genetic population for this species (CNDDDB 2001). The threats to this area consist of, among others, proposed development projects (e.g., possible expansion of a telecommunications facility, and easement for water and sewer construction). These vernal pools have been included in the O'Neill Regional Park Resource Management Plan by the County of Orange (August 1989), which includes efforts to implement restoration and monitoring plans (for biota species, turbidity, and cattle trespass). These plans include inspection of the vernal pools within the determined sensitive ecological area,

restoration (planting of native vernal pool plant species), removal of invasive plants, protection of the watershed and protection from trampling and other sources of habitat damage within the vicinity of the vernal pools.

#### *Proposed Unit 3: Western Riverside County*

No critical habitat has been designated in the Western Riverside County Critical Habitat Unit. In accordance with section 4(b)(2) of the Act, we have excluded lands that are encompassed by the Western Riverside County MSHCP (see Relationship of Critical Habitat to Approved Habitat Conservation Plans). We removed from this critical habitat designation the proposed Sub-unit 3A as the area has been modified and no longer contains the primary constituent elements for the Riverside fairy shrimp. We excluded proposed Sub-unit 3B for national security impacts in accordance with section 4(b)(2) of the Act (see *Relationship of Critical Habitat to Department of Defense Lands, and Application of Section 4(b)(2) to March Air Reserve Base (March ARB)*).

#### *Unit 4: Northern Coastal San Diego County Critical Habitat*

##### *Proposed Unit 4/Final Unit 3: Northern Coastal San Diego County Critical Habitat*

Approximately 397 ac (161 ha) of habitat were proposed for designation in San Diego County, and included some of the vernal pools found on MCB Camp Pendleton as well as the Poinsettia Lane Train Station vernal pool area in the City of Carlsbad.

The Coastal Northern San Diego County Unit in this final rule consists of a vernal pool complex located on coastal terraces. This unit (8 ac (3 ha), map Sub-unit 4C in the proposed rule) is located along the railroad right-of-way at the Poinsettia Lane Commuter Station and supports populations of the Riverside fairy shrimp. These populations represent the last remnant of the historic distribution of vernal pool on coastal terraces in San Diego County and the northernmost occurrences of the Riverside fairy shrimp within San Diego County (not including MCB Camp Pendleton). As a result of coastal development, the Coastal Northern San Diego County Unit represents the only remnant of the historic distribution of vernal pools supporting the Riverside fairy shrimp along the coastal terraces in San Diego County.

The highly limited distribution and fragmentation of vernal pools on coastal

terraces suggests that these populations may be genetically distinct from other populations of the Riverside fairy shrimp as indicated by recent genetic studies that document unique haplotypes between geographically separated populations of the San Diego fairy shrimp (Bohonak 2004). This unit provides space for individual and population growth and reproduction; the soils and surrounding uplands provide food, water, light, minerals, and other nutritional and physiological requirements, and represent the historical geographic distribution of the San Diego fairy shrimp.

The majority of the vernal pool complex along the railroad right-of-way at the Poinsettia Lane Commuter Station is now in a conservation easement managed by the California Department of Fish and Game (CDFG). The lands are owned by the North County Transit District. CDFG is currently in the process of developing a long-term management plan for this area to control non-native weeds and maintain the hydrology of the site. The portion of this vernal pool complex excluded from critical habitat is part of the North San Diego MHCP. Originally included in the proposed rule, the Cocklebur Sensitive Area and other areas on or controlled by MCB Camp Pendleton (proposed map Sub-units 4A and 4B) are exempted from the final designation of critical habitat for the Riverside fairy shrimp under section 4(a)(3) of the Act. For more details, see the sections *Relationship of Critical Habitat to Department of Defense Lands and Relationship of Critical Habitat to Approved Habitat Conservation Plans* below.

##### *Proposed Unit 5/Final Unit 4: South San Diego County Critical Habitat*

In the proposed rule, Unit 5 contained 1,120 acres proposed for designation, all located in the City or County of San Diego. Some of this land is located in the federally owned area known as Arnie's Point along the border with Mexico, and most of the remainder is in East Otay Mesa, an area of major commercial and residential growth. Unit 5 is the southernmost extent of the Riverside fairy shrimp habitat in the U.S.

The vernal pool complexes in this critical habitat map unit are located within a Major/Minor Amendment area within the San Diego MSCP. While these areas are within the San Diego MSCP, Major/Minor Amendment areas do not currently have approved plans that provide conservation measures for the Riverside fairy shrimp. The vernal pool complexes in this unit represent

the southernmost extent of the Riverside fairy shrimp within the United States. Pools on Otay Mesa are considered San Diego claypan vernal pools. The vernal pool complexes in this unit are the only vernal pools on Huerfuerlo loam and Linné clay loam in this critical habitat designation. This unit is essential in preserving the genetic diversity of this species and in maintaining the historic range of this species. The majority of vernal pool complexes on Otay Mesa have been severely degraded by numerous activities, including agricultural development, trash-dumping, and vehicle and human traffic, and many pools have been destroyed and removed due to industrial development in the area. This southernmost section is essential to the conservation of the Riverside fairy shrimp because it maintains the ecological distribution and genetic diversity of this species. No Department of Homeland Security lands along the U.S.-Mexico border are designated as critical habitat in this final rule and we have excluded all other lands within Subunit 5C from critical habitat based on section 4(b)(2) of the Act.

### Effects of Critical Habitat Designation

#### *Section 7 Consultation*

Section 7 of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify designated critical habitat. In our regulations at 50 CFR 402.2, we define destruction or adverse modification as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to: Alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical." We are currently reviewing the regulatory definition of adverse modification in relation to the conservation of the species and are relying on the statutory provisions of the Act in evaluating the effects of Federal actions on designated critical habitat, pending further regulatory guidance.

Section 7(a) of the Act requires Federal agencies, including the Service, to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is proposed or designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402.

Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist the agency in eliminating conflicts that may be caused by the proposed action. We may issue a formal conference report if requested by a Federal agency. Formal conference reports on proposed critical habitat contain an opinion that is prepared according to 50 CFR 402.12, as if critical habitat were designated. We may adopt the formal conference report as the biological opinion when the critical habitat is designated, if no substantial new information or changes in the action alter the content of the opinion (see 50 CFR 402.10(d)). The conservation recommendations in a conference report are advisory.

If a species is listed or critical habitat is designated, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Through this consultation, the action agency ensures that their actions do not destroy or adversely modify critical habitat.

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

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where critical

habitat is subsequently designated and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request re-initiation of consultation or conference with us on actions for which formal consultation has been completed, if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat.

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

Section 4(b)(8) of the Act requires us to briefly evaluate and describe in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat may also jeopardize the continued existence of the Riverside fairy shrimp. Federal activities that, when carried out, may adversely affect critical habitat for the Riverside fairy shrimp include, but are not limited to:

(1) Actions that would permanently alter the function of the underlying claypan or hardpan soil layer to hold and retain water. This would affect the duration and extent of inundation, water temperature and chemistry, and other vernal pool features beyond the tolerances of the Riverside fairy shrimp. Damage or alternation of the claypan or hardpan soil layer would eliminate the function of this PCE for providing space for individual and population growth and for normal behavior; water and physiological requirements; and sites for breeding, reproduction and rearing of offspring. Actions that could permanently alter the function of the underlying claypan or hardpan soil layer include, but are not limited to, grading or earthmoving work that disrupts or rips into the claypan or

hardpan soil layer; or and channelizing, mining, dredging, or drilling into the claypan or hardpan soil layer.

(2) Actions that would permanently reduce the depth of a vernal pool, and the ability of a vernal pool to pond with water, the duration and extent of inundation, water temperature and chemistry, and other vernal pool features beyond the tolerances of the Riverside fairy shrimp. Reducing the depth of the vernal pool would eliminate the function of this PCE for providing space for normal behavior and for individual and population growth, water and physiological requirements, sites for breeding, reproduction and rearing of offspring, and reduce the time available for growth and reproduction as it would accelerate the pool's drying phase. Actions that could permanently reduce the depth of the vernal pool include, but are not limited to, discharge of dredged or fill material into vernal pools and erosion of sediments from fill material, disturbance of soil profile by grading, ditch digging in and around vernal pools, earthmoving work, OHV use, grazing, vegetation removal, or construction of roads, culverts, berms or any other impediment to natural sub-surface or surface hydrological flow within the watershed for the vernal pools. These activities should be carefully planned with hydrology studies and monitored because both increases and decreases to ponding duration can have negative impacts to the Riverside fairy shrimp's ability to persist.

(3) Actions that would substantially alter vernal pool water chemistry to exceed the levels discussed in the "Primary Constituent Elements" section. Exceeding these water chemistry parameters would eliminate the function of this PCE for maintaining the water and physiological requirements of the vernal pool habitat for the Riverside fairy shrimp, and beyond the species' tolerances. Actions that could substantially alter vernal pool water chemistry include, but are not limited to, erosion from fill material or soils disturbed by grading within the watershed for the vernal pools, discharge of dredged or fill material into vernal pools, removal of the clay soils underlying vernal pools, and release of chemicals or pollutants.

(4) Actions that would substantially alter vernal pool water temperatures to exceed temperature ranges beyond those discussed in the "Primary Constituent Elements" section when juvenile and adult Riverside fairy shrimp are present. Exceeding these water temperature parameters would eliminate the

function of this PCE for maintaining the water and physiological requirements of the vernal pool habitat for the Riverside fairy shrimp, and beyond the species' tolerances. Actions that could substantially alter vernal pool water temperature include, but are not limited to, discharge of heated effluents into the surface water or by dispersed release (non-point source).

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

All lands designated as critical habitat are within the geographical area occupied by the species and are necessary to preserve functioning vernal pool habitat for the Riverside fairy shrimp. Federal agencies already consult with us on activities in areas currently occupied by the species, or if the species may be affected by the action, to ensure that their actions do not jeopardize the continued existence of the species. Thus, we do not anticipate substantial additional regulatory protection will result from critical habitat designation, although there may be consultations that result from Federal actions within critical habitat in the watersheds associated with vernal pools.

#### **Application of Section 4(a)(3) and Exclusions Under Section 4(b)(2) of the Act**

##### *Application of Section 4(a)(3) of the Act—Approved and Completed INRMPs*

The Sikes Act Improvements Act of 1997 (Sikes Act) (16 U.S.C. 670a) requires each military installation that includes land and water suitable for the conservation and management of natural resources to complete an INRMP by November 17, 2001. An INRMP combines implementation of the military mission of the installation with stewardship of its natural resources. Each INRMP includes an assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species; a statement of goals and priorities; a detailed description of management actions to be implemented to provide for these ecological needs; and a monitoring and adaptive management

plan. We consult with the Department of Defense on the development and implementation of INRMPs for installations with federally listed species.

Section 318 of the National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to address the relationship of INRMPs to critical habitat by adding a new section 4(a)(3)(B). This provision prohibits us from designating as critical habitat any lands or other geographical areas owned or controlled by the DOD, or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act (16 U.S.C 670a), if the Secretary of the Interior determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

In our April 27, 2004 rule, we proposed critical habitat for the Riverside fairy shrimp for areas containing essential habitat, but not considered mission-critical at MCB Camp Pendleton. We also considered, but did not propose, critical habitat for the Riverside fairy shrimp on mission-essential training areas at MCB Camp Pendleton and at MCAS Miramar (69 FR 23024). For this final rule, we re-evaluated both our exclusions and our proposed designations on MCB Camp Pendleton and on MCAS Miramar based on the completion of their INRMPs, which address the conservation of the Riverside fairy shrimp. We have therefore exempted all areas on MCB Camp Pendleton and on MCAS Miramar from the final critical habitat designation pursuant to section 4(a)(3) of the Act.

##### *Relationship of Critical Habitat to Department of Defense Lands*

We received comments regarding the proposed critical habitat designation and economic impact on Department of Defense lands from the Navy at MCB Camp Pendleton and the former MCAS El Toro, and from the Air Force at March ARB. To ensure that the Department of Defense could comment on the proposed rule and its relationship to section 4(a)(3) of the Act, as amended, we specifically requested information from the Department of Defense regarding MCB Camp Pendleton's INRMP to determine if the INRMP provides a benefit to the Riverside fairy shrimp in the proposed rule published on April 27, 2004 (69 FR 23024).

##### *Application of Section 4(a)(3) to MCB Camp Pendleton (Sub-Units 4A, B)*

Camp Pendleton completed their INRMP in November 2001, which

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 (R.L. Kelly, in lit. 2003). These measures are established, ongoing aspects of existing programs and/or Base directives (e.g., Range and Training Regulations) or measures that will be implemented when the current section 7 consultation for upland species (Uplands Consultation), including the Riverside fairy shrimp, is completed.

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) limiting vehicle and equipment operations to existing road and trail networks year round, and (3) requiring environmental clearance 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. In Fiscal Year 2002, MCB Camp Pendleton spent approximately \$1.5 million on the management of federally listed species. In Fiscal Year 2003, MCB Camp Pendleton expended over \$5 million to fund and implement their INRMP, including management actions that provided a benefit for the Riverside fairy shrimp. Moreover, in partnership with the Service, MCB Camp Pendleton is funding two Service biologists to assist in implementing their Sikes Act program and buffer lands acquisition initiative.

Based on MCB Camp Pendleton's past funding history for listed species and their Sikes Act program (including the management of the Riverside fairy shrimp), we believe there is a high degree of certainty that MCB Camp Pendleton will 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.

We are also in the process of completing a section 7 consultation for upland species on MCB Camp Pendleton. Vernal pools and associated species, including the Riverside fairy shrimp, are addressed in the "Uplands Consultation." When this consultation is completed, MCB Camp Pendleton will incorporate the conservation measures from the biological opinion into their INRMP. At that time, MCB Camp Pendleton's INRMP will provide further benefits to the Riverside fairy shrimp. Therefore, we find that the INRMP for MCB Camp Pendleton provides a benefit for the Riverside fairy shrimp and are exempting from critical habitat lands on MCB Camp Pendleton pursuant to section 4(a)(3) of the Act.

#### *Application of Section 4(a)(3) to MCAS Miramar*

We reaffirm our exemption of MCAS Miramar under section 4(a)(3) of the Act. MCAS Miramar completed a final INRMP in May 2000 that provides for conservation, management and protection of the Riverside fairy shrimp. The INRMP is in place and is being implemented. With regard to 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 MAs with the Level I designation. The conservation of vernal pool basins and watersheds in a Level I Management Area is achieved through education of base personnel, proactive measures to avoid accidental impacts, including signs and fencing, developing procedures to respond to and fix accidental impacts on vernal pools, and maintenance of an updated inventory of vernal pool basins and associated vernal pool watersheds.

Since the completion of MCAS Miramar's INRMP, we have 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 on vernal pool resources, vernal pool mapping and species surveys, and a study of Pacific bentgrass (*Agrostis avenaceae*), an invasive nonnative grass found in some vernal pools on MCAS Miramar. Based on the value MCAS Miramar's INRMP assigns to vernal pool basins and watersheds, and the management actions undertaken conserve them, we find that the INRMP provides a benefit for the Riverside fairy shrimp. In accordance with section 4(a)(3) of the Act, MCAS Miramar is exempted from critical habitat designation for the Riverside fairy shrimp.

#### **Application of Section 4(b)(2) of the Act—National Security**

##### *Application of Section 4(b)(2) National Security to March Air Reserve Base (Sub-Unit 3B)*

March Air Reserve Base (March ARB) is an Air Force Command installation that includes runways, hangars, aircraft parking aprons, taxiways, administrative facilities, billeting facilities, associated road network, landscape areas, and open areas associated with runway threshold and lateral clear zones. March ARB hosts the 452nd Air Mobility Wing and supports an Air National Guard Wing, Headquarters 4th Air Force, and other military and civilian organizations. The 452nd Air Mobility Wing is the primary air mobility organization for supporting the 1st Marine Expeditionary Force for worldwide contingency operations. The Air National Guard Wing includes the 163d Air Refueling Wing and 120th Fighter Wing. March ARB also supports the Department of Homeland Security Riverside Aviation Unit.

##### (1) Benefits of Inclusion

The primary benefit of designating critical habitat is that Federal agencies would have to consult with us on projects they carry out, fund, or authorize to ensure such activities do not adversely modify or destroy designated critical habitat. Absent the designation of critical habitat, Federal agencies must still consult with us if they determine an action may affect a federally listed species to ensure those actions will not jeopardize the species. We already consult with March ARB on actions that may affect listed species, including the Riverside fairy shrimp. Because protection of vernal pool habitat is key to avoiding jeopardy to the Riverside fairy shrimp, we carefully

consider the effects on habitat in our evaluation of impacts to the species.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has been achieved, as both the military and civilian managers and users of the area are fully familiar with the existence and needs of the shrimp. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

Under the Gifford Pinchot decision, the designation of critical habitat may provide greater benefits to the recovery of the species than previously believed. However, at this point, it is not possible to quantify that benefit.

In summary, we believe that this proposed unit as critical habitat would provide little additional federal regulatory benefits for the species. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are accomplished.

#### (2) Benefits of Exclusion

In contrast to the absence of a significant benefit resulting from designating critical habitat for the Riverside fairy shrimp at March ARB, there are substantial benefits to excluding this area from critical habitat. If critical habitat were to be designated on this land the Air Force could be compelled to re-initiate consultations with us under section 7 of the Act on activities that have previously been reviewed but have not yet been implemented, in order to address whether the proposed activities may affect designated critical habitat. In addition, they would be required to consult over possible effects from future activities on the critical habitat. The additional burden of initiating and reinitiating consultations could impede the timely conduct of mission-essential training activities and impair the ability of the Air Force to fully achieve its mission. Moreover, our final Economic Analysis has determined that there could be additional costs of \$33 million, including an additional \$950,000 for an Environmental Impact Statement to be completed for March ARB to maintain operations of its runway and taxiways. A California Air National Guard heavy

equipment unit would require relocation, costing \$31.5 million.

#### (3) Benefits of Exclusion Outweigh the Benefits of Inclusion in Critical Habitat

Because of the relatively limited benefits arising from designation, we believe the role played in supporting overseas Marine Corps operations and the related importance to national security of ensuring March ARB's ability to maintain a high level of military readiness, and the additional cost impacts identified in our economic analysis, we believe the benefits of exclusion outweigh the benefits of inclusion and have excluded this facility pursuant to section 4(b)(2) of the Act.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp must undergo a consultation with the Service under the requirements of section 7 of the Act. The species is protected from take under section 9 of the Act. The exclusions leave these protections unchanged. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

#### *Leased Lands at Marine Corps Base Camp Pendleton (San Onofre State Park)—Exclusions Under Section 4(b)(2)*

The Marine Corps operates Camp Pendleton as an amphibious training base that promotes the combat readiness of military forces and is the only West Coast Marine Corps facility where amphibious operations can be combined with air, sea, and ground assault training activities year-round. Currently, the Marine Corps has no alternative installation available for the types of training that occur on Camp Pendleton.

The Marine Corps leases some of the land at Camp Pendleton to the State of California for use as San Onofre State Park. In their comments on the proposed critical habitat for the Riverside fairy shrimp, the Marines noted the adverse impacts to their training abilities which they believe have resulted from various environmental laws, with the Act foremost among these, and provide a study to support their contention. While their comments and the study focused primarily on lands currently used for training, and they supported the Service's stated intent to exempt "mission-critical" areas under sections 4(a)(3) or 4(b)(2), they also stated

"simply because some areas of the Base may not be designated as a range or training area, \* \* \* such areas should not be presumed to be unimportant or not useful to support training actions, either today or in the future." In the same letter (Bowdon, May 2004, in litt.) the Commanding General said: "In particular, both the Commandant of the Marine Corps and I have personally expressed deep concerns that the designation of critical habitat aboard Camp Pendleton would impose long term, cumulative and detrimental impacts on the capabilities of the base to perform its military mission, \* \* \*".

The San Onofre State Park lands are potential training lands that are not covered by the other exemptions provided to Camp Pendleton lands, as they are managed by the State and not covered by the base's INRMP. Based on the comments from the Corps, we are excluding these lands, consisting of approximately 47 acres, on national security grounds, so they could be available quickly to the Marines in the event they were needed for military training.

#### (1) Benefits of Inclusion

The primary benefit of any critical habitat with regard to activities that require consultation pursuant to section 7 of the Act is to ensure that the activity will not destroy or adversely modify designated critical habitat. However, since this land is managed by the State of California, it is not open to development and is subject to the protective laws and regulations applicable to the State Parks. The educational benefits of critical habitat include informing the Marine Corps and the State of California of areas that are important to the conservation of listed species. However, we are confident both are now aware of this. As long as the land is managed by the State of California, there is not likely to be a Federal nexus which would trigger consultation with us should critical habitat be designated. Therefore, we do not believe that designation of this area as critical habitat will appreciably benefit the shrimp beyond the protection already afforded the species under the Act.

#### (2) Benefits of Exclusion

In contrast to the absence of an appreciable benefit resulting from designation of these lands as critical habitat, there is a benefit to excluding them through avoidance of delay should the Corps need the land for military purposes. The Corps' lease agreement with the State provides that the land can be reclaimed with a 90-day notice, and

if urgently needed for military purpose, the reversion might well be more rapid. However, if the land were designated as critical habitat, the requirement to consult on activities to be conducted there could delay and impair the ability of the Marine Corps to conduct effective training activities and limit Camp Pendleton's utility as a military training installation. We already have consultations with them under section 7 on activities related to the presence of the shrimp, as a result of which we could likely do a consultation related to jeopardy very quickly. However, there has been no consultation on critical habitat for the species, and under the new standard for adverse modification that may result from the Gifford Pinchot decision there is no reason to believe this could be done quickly.

#### (3) Benefits of Exclusion Outweigh the Benefits of Inclusion

Based on the current world situation, the Marine Corps' need to maintain a high level of readiness and fighting capabilities, and the possible impact on national security if that is obstructed, we believe the benefits of excluding these lands outweigh the benefits of including them.

#### (4) Exclusion Will Not Result in Extinction of the Species

Because the lands are occupied by the species and the Marine Corps has a statutory duty under section 7 to ensure that its activities do not jeopardize the continued existence of the shrimp, we find that the exclusion of these areas will not lead to the extinction of the Riverside fairy shrimp.

#### *Application of Section 4(b)(2) National Security to U.S. Department of Homeland Security Lands (Sub-Unit 5B and Portions of 5C)*

In our previous (69 FR 23024) rule, we proposed to designate as critical habitat lands adjacent to the U.S.-Mexico border under the jurisdiction of the U.S. Department of Homeland Security (DHS), U.S. Border Patrol, San Diego Sector (Sub-unit 5B, portion of Sub-unit 5C). The portion of the lands owned by the DHS that are directly adjacent to the U.S.-Mexico border lands have previously been disturbed and developed by the ongoing construction of the Border Infrastructure System (BIS), and those lands within the constructed portion of the footprint of the BIS do not contain any of the primary constituent elements for the Riverside fairy shrimp. The BIS is considered integral to national security, and therefore, lands owned by DHS along the U.S.-Mexico border have been

excluded from the designation under section 4(b)(2) of the Act for national security impacts.

On February 6, 2002, the Service completed a section 7 consultation with the U.S. Army Corps of Engineers (Corps) and the former Immigration and Naturalization Service on the effects of closing a gap in the Border Fence Project's secondary fence at Arnie's Point on three endangered species occurring there, the Riverside fairy shrimp, San Diego fairy shrimp, and San Diego button-celery (*Eryngium aristulatum* var. *parishii*; Service 2002). We concluded in our biological opinion that the proposed action, which includes the loss of a linear vernal pool occupied by both the Riverside fairy shrimp and San Diego fairy shrimp, was not likely to jeopardize the continued existence of the three endangered species. On January 9, 2003, the Service completed a section 7 consultation with the former Immigration and Naturalization Service of the effects on the endangered Riverside fairy shrimp and endangered San Diego fairy shrimp from the construction of a secondary border fence and other road and fencing improvements in Area II along the U.S.-Mexico border (Service 2003). We concluded in our biological opinion that the proposed action, which included the loss of three vernal pool basins, was not likely to jeopardize the continued existence of the Riverside fairy shrimp and San Diego fairy shrimp. To offset losses for fairy shrimp, the DHS has conducted two restoration projects and has designated some DHS-owned lands located north of the BIS (at Arnie's Point) as mitigation for completion of the border system. As part of the proposed actions for these two section 7 consultations, DHS committed to implement a variety of conservation measures that would restore and create vernal pool habitats and enhance their watershed, including the commitment to transfer these lands to a conservation resource agency and/or to protect and conserve the lands in perpetuity. We have therefore determined to exclude this area, which contains the remainder of lands within Sub-unit 5B, from the critical habitat designation according to 4(b)(2) of the Act for national security.

#### (1) Benefits of Inclusion

There is minimal benefit from designating critical habitat for the Riverside fairy shrimp that are already managed for the conservation of vernal pool habitat. One possible benefit of including these lands as critical habitat would be to educate the public regarding the conservation value of these areas and the vernal pool complex

they support. However, critical habitat designation provides little gain in the way of increased recognition on lands that are expressly managed to protect and enhance vernal pools for San Diego fairy shrimp. In addition, the Service has already thoroughly evaluated the impacts of the BIS project on the Riverside fairy shrimp and its vernal pool habitat, determined that the project will not jeopardize the continued existence of the species, and received commitments from INS (now DHS) for restoration, protection and management of nearby Riverside fairy shrimp habitat. Therefore, we believe the designation of areas covered by the project and restoration areas would provide little benefit to the species.

#### (2) Benefits of Exclusion

The exclusion of the DHS-owned land within the BIS footprint will remove any delay in the BIS project occasioned by the need to reinitiate consultation. Expedient completion of the BIS project is vital to our country's national security. Exclusion of the restoration areas will also remove any regulatory delay associated with completion of this important habitat restoration project.

#### (3) Benefits of Exclusion Outweigh Benefits of Inclusion

We conclude that the minimal benefits of designating critical habitat on the BIS project lands, including the 21.8-ac vernal pool restoration area, are far outweighed by the substantial benefits to national security from early completion of this project. Therefore we are excluding the BIS lands within Sub-unit 5B under section 4(b)(2) of the Act (see *Relationship of Critical Habitat to Approved Habitat Conservation Plans* below). The remaining area within Sub-unit 5B and some lands within Sub-unit 5C owned by the DHS are within the constructed BIS footprint and no longer contain any vernal pool habitat for the Riverside fairy shrimp; those impacts have been offset by the conservation measures to be implemented by DHS at the 21.8-acre vernal pool restoration area at Arnie's Point. Thus, the remaining lands within Sub-unit 5B and some lands within Sub-unit 5C owned by the DHS are not essential to the conservation of the Riverside fairy shrimp and are not designated as critical habitat in this final rule. Thus, no lands owned by the Department of Homeland Security have been designated as critical habitat.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the

species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of sec. 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species. Moreover, at Arnie's Point, the DHS is restoring habitat for the Riverside fairy shrimp and will transfer that land to a MSCP cooperating agency.

*Relationship of Critical Habitat to Economic Impacts—Exclusions Under Section 4(b)(2) of the Act*

This section allows the Secretary to exclude areas from critical habitat for economic reasons if she determines that the benefits of such exclusion exceed the benefits of designating the area as critical habitat, unless the exclusion will result in the extinction of the species concerned. This is a discretionary authority Congress has provided to the Secretary with respect to critical habitat. Although economic and other impacts may not be considered when listing a species, Congress has expressly required their consideration when designating critical habitat. Exclusions under this section for non-economic reasons are addressed above.

In general, we have considered in making the following exclusions that all of the costs and other impacts predicted in the economic analysis may not be avoided by excluding the area, due to the fact that the areas in question are currently occupied by the Riverside fairy shrimp and there will be requirements for consultation under Section 7 of the Act, or for permits under section 10 (henceforth "consultation"), for any take of the species, and other protections for the species exist elsewhere in the Act and under State and local laws and regulations. In addition, some areas are also occupied by other listed species and in some cases are designated as critical habitat for those species. In conducting economic analyses, we are guided by the 10th Circuit Court of Appeal's ruling in the New Mexico

Cattle Growers Association case (248 F.3d at 1285), which directed us to consider all impacts, "regardless of whether those impacts are attributable co-extensively to other causes." As explained in the analysis, due to possible overlapping regulatory schemes and other reasons, there are also some elements of the analysis which may overstate some costs.

Conversely, the 9th Circuit has recently ruled ("Gifford Pinchot", 378 F.3d at 1071) that the Service's regulations defining "adverse modification" of critical habitat are invalid because they define adverse modification as affecting both survival and recovery of a species. The court directed us to consider that adverse modification should be focused on impacts to recovery. While we have not yet proposed a new definition for public review and comment, changing the adverse modification definition to respond to the Court's direction may result in additional costs associated with critical habitat definitions (depending upon the outcome of the rulemaking). This issue was not addressed in the economic analysis for the Riverside fairy shrimp, as this was well underway at the time the decision was issued and we have a court-ordered deadline for reaching a final decision, so we cannot quantify the impacts at this time. However, it is a factor to be considered in evaluating projections of future economic impacts from critical habitat.

We recognize that we have excluded a significant portion of the proposed critical habitat. Congress expressly contemplated that exclusions under this section might result in such situations when it enacted the exclusion authority. House Report 95-1625, stated on page 17:

"Factors of recognized or potential importance to human activities in an area will be considered by the Secretary in deciding whether or not all or part of that area should be included in the critical habitat \* \* \* In some situations, no critical habitat would be specified. In such situations, the Act would still be in force to prevent any taking or other prohibited act \* \* \*"

We accordingly believe that these exclusions, and the basis upon which they are made, are fully within the parameters for the use of section 4(b)(2) set out by Congress.

*Application of Section 4(b)(2) Economic Exclusion to Former MCAS El Toro (Sub-Unit 2C)*

We have excluded all of proposed Sub-unit 2C, consisting of approximately 133 ac (54 ha; with 14 ac

(6 ha) of essential habitat) at the former MCAS El Toro in Orange County, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

(1) Benefits of Inclusion

If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, since the species is present, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and publicity over the prior litigation.



**(2) Benefits of Exclusion**

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would be \$56.7 million. By excluding this unit, some or all of those costs will be avoided.

**(3) The Benefits of Exclusion Exceed the Benefits of Inclusion**

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat. We also note that the management plans to acquire land off-site, restore vernal pools there, relocate the species to these pools, initiate biological monitoring, and provide for project management.

Designating critical habitat would impose a disincentive for this type of conservation efforts, and add to the costs. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

**(4) Exclusion Will Not Result in Extinction of the Species**

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

*Application of Section 4(b)(2) Economic Exclusion to Saddleback Meadows and Other Private Lands (Portion of Sub-Unit 2D)*

We have excluded the Saddleback Meadows and other private lands within

portion of proposed Sub-unit 2D, consisting of approximately 736 ac (298 ha) with 57 ac (23 ha) of essential habitat near O'Neill Regional Park, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

**(1) Benefits of Inclusion**

The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the

development of this regulation, and publicity over the prior litigation.

**(2) Benefits of Exclusion**

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range between over \$10 million to nearly \$60 million, largely as loss of land value and increased costs to private landowners. These costs range from \$14,000 and \$79,000 per acre. The variability in the impact encompasses a low to high amount of required set aside acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site. By excluding this unit, some or all of those costs will be avoided.

**(3) The Benefits of Exclusion Exceed the Benefits of Inclusion**

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

**(4) Exclusion Will Not Result in Extinction of the Species**

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In

addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

The Service completed a section 7 consultation with the Corps on October 26, 2001 on the impacts of the proposed Saddleback Meadows Residential Development Project (Service 2001). With reference to this critical habitat designation, the consultation addressed the effects of proposed residential development project, on the federally endangered Riverside fairy shrimp and its proposed critical habitat. The project entails a 283-unit residential development on approximately 128 ac within the 225 ac Saddleback Meadows site, in the Foothill Trabuco Specific Plan area of Orange County, and proposed to fill three unbreached vernal pools, and two breached ponds, of the total nine pools in the area that are known to contain Riverside fairy shrimp. Approximately 97 ac of biological open space will be established by the project, including native habitat restoration on areas of the surrounding slopes.

In evaluating the management plan that covers 97 ac of biological open space, we determined that the biological open space area provided by the proposed Saddleback Meadows Residential Development Project would be adequately managed, *i.e.*, the plan or agreement would provide conservation benefits to the species. This is ensured by the following conservation measures to be implemented as part of the proposed action to mitigate impacts and minimize potential adverse effects of the proposed project. These measures include plans to preserve four pools within the open space area, and to create four ephemeral pools onsite to which Riverside fairy shrimp would be introduced (using cysts from impacted vernal pools). Approximately one-fifth of the salvaged soil and cysts will be placed in storage at the San Diego Zoological Society's Center for the Reproduction of Endangered Species until the ponds have met predetermined success criteria. Further, the implementation of a 10-year fairy shrimp pond creation, maintenance and monitoring plan includes success criteria for establishing viable fairy shrimp populations and the hydrology necessary to support them in the created ponds, and measures to ensure avoidance of irrigation water entering

the vernal pools and ponds. Reasonable assurances that the management plan will be implemented are provided by the requirement that the proposed project proponent execute and record an irrevocable offer to dedicate over 97 ac of biological open space, including avoided and created pools and their watersheds, accompanied by a perpetual conservation easement for biological conservation purposes. Reasonable assurances that the conservation effort will be effective are given through the Service and Corps-approved plans mentioned above for perpetual maintenance and monitoring, and the non-wasting endowment that will be established to finance it. Further, the easement will state that no other easements, modifications or other activities which would result in disturbance to the pools or their PCEs would be allowed within the biological conservation easement area.

In sum, we believe that these conservation measures identified in the consultation, including the dedication of 97.4 acres of biological open space (including the avoided and created fairy shrimp ponds and their watersheds) and the management, maintenance, and monitoring plans and funding to implement the plans, would provide a conservation benefit to the Riverside fairy shrimp.

*Application of Section 4(b)(2) Economic Exclusion to Lands Near Tijeras Creek (Proposed Sub-Unit 2E)*

We have excluded all of proposed Sub-unit 2E, consisting of approximately 321 ac (130 ha) with approximately 101 ac (41 ha) of essential habitat near Tijeras Creek, Mission Viejo, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

(1) Benefits of Inclusion

The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the

critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and publicity over the prior litigation.

(2) Benefits of Exclusion

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range from over \$5 million to over \$30 million, largely as loss of land value and increased costs to private landowners. These costs could exceed \$90,000 per acre. The variability in the impact encompasses a low to high amount of required set aside acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site. By excluding this unit, some or all of those costs will be avoided.

(3) The Benefits of Exclusion Exceed the Benefits of Inclusion

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as

discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

#### *Application of Section 4(b)(2) Economic Exclusion to Chiquita Ridge (Sub-Unit 2F)*

We have excluded all of Sub-unit 2F, consisting of approximately 489 ac (198 ha) and containing approximately 263 ac (106 ha) of essential habitat near Chiquita Ridge, Mission Viejo, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

#### (1) Benefits of Inclusion

The areas excluded are currently occupied by the species. If these areas

were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled “Effects of Critical Habitat Designation.” However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of “harm” at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and publicity over the prior litigation.

#### (2) Benefits of Exclusion

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range from nearly \$8 million to nearly \$45 million, largely as loss of land value and increased costs to private landowners. These costs range from nearly \$16,000 to \$89,000 per acre. The variability in the impact encompasses a low to high amount of required set aside

acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site. By excluding this unit, some or all of those costs will be avoided.

#### (3) The Benefits of Exclusion Exceed the Benefits of Inclusion

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

*Application of Section 4(b)(2) Economic Exclusion to Lands Near Radio Tower Road (Sub-Unit 2G)*

We have excluded all of Sub-unit 2G, near Radio Tower Road in Mission Viejo, consisting of approximately 736 ac (298 ha) and containing approximately 417 ac (169 ha) of essential habitat, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

(1) Benefits of Inclusion

The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it.

The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and publicity over the prior litigation.

(2) Benefits of Exclusion

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range from \$8 million to nearly \$45 million, largely as loss of land value and increased costs to private landowners. These costs range from \$14,000 and \$79,000 per acre. The variability in the impact encompasses a low to high amount of required set aside acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site. By excluding this unit, some or all of those costs will be avoided.

(3) The Benefits of Exclusion Exceed the Benefits of Inclusion

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

(4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is

protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

*Application of Section 4(b)(2) Economic Exclusion to Southeastern Otay Mesa (Sub-Unit 5C)*

We have excluded the remainder of Sub-unit 5C, approximately 866 ac (350 ha), and containing approximately 111 ac (45 ha) of essential habitat at Otay Mesa, under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

(1) Benefits of Inclusion

The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise

from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompanied the development of this regulation, and publicity over the prior litigation.

#### (2) Benefits of Exclusion

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range from \$5 million to \$31 million, largely as loss of land value and increased costs to private landowners. The variability in the impact encompasses a low to high amount of required set aside acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site.

In addition, landowners in this proposed unit have already incurred approximately \$42 million in costs and loss of value as a result of the listing of the Riverside fairy shrimp. Moreover, the analysis showed that, given RFS-related conservation activities, San Diego County may have produced 3,700 fewer housing units, or 4.4 percent of the total built, over the 12-year time period since listing, and that the level of supply reductions in San Diego County suggest that the real estate market and housing prices may have been affected. It found that additional consumers and producers were and are likely affected by the changes in price and quantity, and the magnitude of the total impacts in this instance would surpass the landowner-only cost figures cited above.

Although the analysis considered all of proposed unit in its entirety, it seems clear that the economic impacts to landowners will largely arise from the Sub-unit 5C. Sub-unit 5A (61 ac (25 ha)) is owned by the Sweetwater Union High School District, and Sub-unit 5B by the DHS (see *Application of Section 4(b)(2) National Security to U.S. Department of Homeland Security Lands* above); real estate development is not a likely event

on either set of lands. By excluding Sub-unit 5C, we will avoid some or all of these additional costs to those already incurred by affected landowners. The remaining lands within Subunit 5A are conserved as part of a section 7 consultation and are not available for future residential development.

#### (3) The Benefits of Exclusion Exceed the Benefits of Inclusion

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, on top of the extensive costs they have already incurred, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of section 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

#### *Relationship of Critical Habitat to Approved Habitat Conservation Plans (HCPs)*

We have excluded lands within habitat conservation plans under section 4(b)(2) of the Act. The analysis which led us to the conclusion that the benefits of excluding this area exceed the benefits of designating it as critical habitat, and will not result in the extinction of the species, follows.

#### (1) Benefits of Inclusion

The areas excluded are currently occupied by the species. If these areas were designated as critical habitat, any actions with a Federal nexus which might adversely modify the critical habitat would require a consultation with us, as explained above, in the section of this notice entitled "Effects of Critical Habitat Designation." However, inasmuch as this area is currently occupied by the species, consultation for activities which might adversely impact the species, including possibly significant habitat modification (see definition of "harm" at 50 CFR 17.3) would be required even without the critical habitat designation and without regard to the existence of a Federal nexus.

Another possible benefit of a critical habitat designation is education of landowners and the public regarding the potential conservation value of these areas. This may focus and contribute to conservation efforts by other parties by clearly delineating areas of high conservation values for certain species. However, we believe that this educational benefit has largely been achieved. As explained above, this is the 2nd iteration of the critical habitat process for these lands, which has included both public comment periods and litigation, all with accompanying publicity. Therefore, we believe the education benefits which might arise from a critical habitat designation here have largely already been generated.

In summary, we believe that this proposed unit as critical habitat would provide little additional Federal regulatory benefits for the species. Under the Gifford Pinchot decision, critical habitat designations may provide greater benefits to recovery of a species than was previously believed, but it is not possible to quantify this at present. Because the proposed critical habitat is occupied by the species, there must be consultation with the Service over any action which might impact it. The additional educational benefits which might arise from critical habitat designation are largely accomplished through the multiple notice and

comments which accompanied the development of this regulation, and publicity over the prior litigation.

#### (2) Benefits of Exclusion

The economic analysis conducted for this proposal estimates that the costs associated with designating this unit of the proposed critical habitat would range from over \$5 million to over \$30 million, largely as loss of land value and increased costs to private landowners. These costs could exceed \$90,000 per acre. The variability in the impact encompasses a low to high amount of required set aside acreage that depends on vernal pool site geometry, requirements of land use regulations, and planned uses of the site. By excluding this unit, some or all of those costs will be avoided.

#### (3) The Benefits of Exclusion Exceed the Benefits of Inclusion

We do not believe that the benefits from the designation of critical habitat for lands we have decided to exclude—a limited educational benefit and very limited regulatory benefit, which are largely otherwise provided for, as discussed above—exceed the benefits of avoiding the potential economic costs which could result from including those lands in this designation of critical habitat.

We also believe that excluding these lands, and thus helping landowners and water users avoid the additional costs that would result from the designation, will contribute to a more positive climate for Habitat Conservation Plans and other active conservation measures which provide greater conservation benefits than would result from designation of critical habitat—even in the post-Gifford Pinchot environment—which requires only that there be no adverse modification resulting from Federally-related actions. We therefore find that the benefits of excluding these areas from this designation of critical habitat outweigh the benefits of including them in the designation.

#### (4) Exclusion Will Not Result in Extinction of the Species

We believe that exclusion of these lands will not result in extinction of the species, as they are considered occupied habitat. Any actions which might adversely affect the shrimp, regardless of whether a Federal nexus is present, must undergo a consultation with the Service under the requirements of sec. 7 of the Act. The shrimp is protected from take under section 9. The exclusions leave these protections unchanged from those which would exist if the excluded areas were

designated as critical habitat. In addition, as discussed above, there are a substantial number of Habitat Conservation Plans and other active conservation measures underway for the species, which provide greater conservation benefits than would result from a designation. There is accordingly no reason to believe that these exclusions would result in extinction of the species.

As described above, section 4(b)(2) of the Act requires us to consider other relevant impacts, in addition to economic and national security impacts, when designating critical habitat. Section 10(a)(1)(B) of the Act authorizes us to issue permits for the take of listed wildlife species incidental to otherwise lawful activities. Development of an HCP is a prerequisite for the issuance of an incidental take permit pursuant to section 10(a)(1)(B) of the Act. An incidental take permit application must be supported by an HCP that identifies conservation measures that the permittee agrees to implement for the species to minimize and mitigate the impacts of the permitted incidental take.

HCPs vary in size and may provide for incidental take coverage and conservation management for one or many federally listed species. Additionally, more than one applicant may participate in the development and implementation of an HCP. Some areas occupied by, and determined to be essential to, the Riverside fairy shrimp involve complex HCPs that address multiple species, cover large areas, and have many participating permittees. Large regional HCPs expand upon the basic requirements set forth in section 10(a)(1)(B) of the Act because they reflect a voluntary, cooperative approach to large-scale habitat and species conservation planning. Many of the large regional HCPs in southern California have been, or are being, developed to provide for the conservation of numerous federally listed species and unlisted sensitive species and the habitat that provides for their biological needs. These HCPs address impacts within the plan's boundaries area and create a preserve design within the planning area. Over time, areas in the planning area are developed according to the HCP, and the area within the preserve is acquired, managed, and monitored. These HCPs are designed to implement conservation actions to address future projects that are anticipated to occur within the planning area of the HCP, in order to reduce delays in the permitting process.

In the case of approved regional HCPs (e.g., those sponsored by cities, counties, or other local jurisdictions)

wherein the conservation of the Riverside fairy shrimp is addressed, a primary goal is to provide for the protection and management of habitat essential for the conservation of the Riverside fairy shrimp while directing development to non-essential areas. The regional HCP development process provides an opportunity for more intensive data collection and analysis regarding the use of particular habitat areas by the Riverside fairy shrimp. The regional HCP planning process also enables us to construct a habitat preserve system that provides for the biological needs and long-term conservation of the Riverside fairy shrimp. Completed HCPs and their accompanying Implementation Agreements contain management measures and protections for identified preserve areas that protect, restore, and enhance the value of these lands as habitat for the Riverside fairy shrimp. These measures include explicit standards to minimize any impacts to the covered species and its habitat. In general, HCPs are designed to ensure that the value of the conservation lands are maintained, expanded, and improved for the species that they cover.

In approving these HCPs, the Service has provided assurances to permit holders that once the protection and management required under the plans are in place and for as long as the permit holders are fulfilling their obligations under the plans, no additional mitigation in the form of land or financial compensation will be required of the permit holders and, in some cases, specified third parties. Similar assurances will be extended to future permit holders in accordance with the Service's HCP Assurance ("No Surprises") rule codified at 50 CFR 17.22(b)(5) and (6) and 17.32(b)(5) and (6).

We believe that in most instances, the benefits of excluding legally operative HCPs from the critical habitat designations will outweigh the benefits of including them and would thereby prevent the extinction of the species. The following represents our rationale for excluding essential habitat from critical habitat for lands within approved HCPs.

#### *Orange County Central-Coastal Natural Community Conservation Program/Habitat Conservation Plan*

The Central-Coastal Natural Community Conservation Program/Habitat Conservation Plan (NCCP/HCP) in Orange County was developed in cooperation with numerous local and State jurisdictions and agencies and

participating landowners, including the cities of Anaheim, Costa Mesa, Irvine, Orange, San Juan Capistrano, and the Southern California Edison and 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 lands for 39 Federal- or State-listed and unlisted sensitive species within the 208,713 ac (84,463 ha) planning area. We issued an incidental take permit under section 10(a)(1)(B) of the Act that provides conditional incidental take authorization for the Riverside fairy shrimp for all areas within the Central-Coastal Sub-region.

Within the Central-Coastal NCCP/HCP, in the North Ranch Policy Plan area, Riverside fairy shrimp are known to occur in a natural vernal pool located on a rock outcropping. The North Ranch Policy Plan area was excluded from the take authorization provided under the Central-Coastal NCCP/HCP. However, in 2002, the owner of lands within the North Ranch Policy Plan area (the Irvine Company), granted a conservation easement to The Nature Conservancy over the portion of the land where this vernal pool is located, and provided a \$10 million management endowment. The conservation easement and management endowment provide special management and protection for the Riverside fairy shrimp. Therefore, essential habitat within the North Ranch Policy Plan area and within the other lands covered by the Central-Coastal NCCP/HCP in Orange County (within Map Unit 2) have been excluded from this final critical habitat designation based on section 4(b)(2) of the Act.

#### *Western Riverside County Multiple Species Habitat Conservation Plan*

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) was developed over a period of eight years. Participants in this HCP include 14 cities, the County of Riverside (including the Riverside County Flood Control and Water Conservation Agency, Riverside County Transportation Commission, Riverside County Parks and Open Space District, and Riverside County Waste Department), the California Department of Parks and Recreation, and the California Department of Transportation. The Western Riverside County MSHCP is a sub-regional plan under the State's NCCP and was developed in cooperation with the California Department of Fish and

Game. The MSHCP establishes a multi-species conservation program to minimize and mitigate the expected loss of habitat values of "covered species" and, with regard to covered animal species, their incidental take. The intent of the MSHCP is to provide avoidance, minimization, and mitigation measures for the impacts of proposed activities on covered species and their habitats. Within the 1,260,000 ac (510,000 ha) Plan Area of the MSHCP, approximately 153,000 ac (62,000 ha) of diverse habitats are now being conserved. The conservation of this large area complements other existing natural and open space areas (e.g., State Parks, Forest Service, and County Park lands). Essential habitat for the Riverside fairy shrimp within the Western Riverside County MSHCP area (within Map Unit 3) has been excluded from critical habitat pursuant to section 4(b)(2) of the Act.

In Riverside County, there are 7 naturally occurring populations of Riverside fairy shrimp (in Skunk Hollow Pool, Field Pool, Scott Pool, Schleuniger Pool, Pechanga Pool, Australia Pool, March Air Reserve Base, and Banning Complex), one population in created pools (Johnson Ranch Created Pools), and one population proposed to be relocated into created pools (Clayton Ranch Proposed Pools), all of which are located within the Plan Area of the Western Riverside County MSHCP (Service 2004). The pools in Riverside County are significant since they represent the most inland extent of the species range (Eriksen and Belk 1999). Also, the type locality for the species, which is of taxonomic significance, was located within Riverside County (Eriksen 1988). Habitat within Riverside County is ideal for the species. Riverside County harbors large vernal pools that persist for long periods of time, allowing this slow-maturing species to reproduce. One of these, the Skunk Hollow Pool, is the largest valley vernal pool remaining in all of southern California (Eriksen and Belk 1999).

Within the Plan Area, four occurrences and their watersheds are protected by existing conservation and management agreements: (1) Skunk Hollow Pool, (2) Field Pool, (3) seven Johnson Ranch Created Pools, and (4) two Clayton Ranch Proposed Pools. A fifth occurrence, Schleuniger Pool, is also protected by existing conservation and management agreements; however, part of its watershed remains unprotected. Under the Western Riverside County MSHCP, the Lake Elsinore Back Basin Core Area will be conserved. The Australia Pool, which is located within this Core Area, will

likely have a minimum buffer of 380 feet to a buffer greater than 1,000 feet from the edge of the pool (Service 2004). Three known populations of Riverside fairy shrimp are located outside of the MSHCP Conservation Area including Banning Complex, Pechanga Pool, and Scott Pool. The Scott Pool has recently been impacted by disking, several pipeline projects, and the installation of a telephone pole (Service 2004). The Pechanga Pool has been subject to cultivation (Eriksen 1988). Impacts to these pools will be avoided and minimized through implementation of the Riparian/Riverine Areas and Vernal Pools Policy. Specifically, this policy requires that habitat for this species be mapped throughout the Plan Area and avoided if feasible. If avoidance is not feasible, surveys will be conducted and 90 percent of the occupied area determined to have long-term conservation value for the species will be conserved and managed (Service 2004).

We anticipate the loss of only 10 percent of occupied Riverside fairy shrimp habitats determined to have long-term conservation value for the species. We anticipate that this species will persist in the remaining 90 percent of occupied habitat with long-term conservation value for the species, including the 39 percent of the modeled habitat within both the existing public/quasi-public lands and the Additional Reserve Lands. The MSHCP will further offset the proposed impacts to this species through management and monitoring actions within the Reserve, including the enhancement of historic or vestigial vernal pools within Core Areas. This enhancement will help offset the impacts of the action by increasing the quality of the habitat that is conserved for this species and by allowing the expansion of populations within the Reserve through the enhancement of historic or vestigial vernal pools that do not currently provide habitat for the species (Service 2004). The Western Riverside County MSHCP includes a significant number of local and State partners. Moreover, the County of Riverside and the participating jurisdictions have demonstrated their sustained support for the Western Riverside County MSHCP by the November 5, 2002 passage of a local bond measure to fund the acquisition of land in support of the MSHCP. Excluding critical habitat from the Western Riverside County MSHCP will continue to foster the close partnerships with the local jurisdictions and the State of California.



### *Northwestern San Diego Multiple Habitat Conservation Plan*

The Northwestern San Diego Multiple Habitat Conservation Plan (MHCP) encompasses approximately 111,939 ac (45,300 ha) and proposes to establish 19,928 ac (8,064 ha) of preserve lands covering Federal or State listed, unlisted, and sensitive species, including the Riverside fairy shrimp. Seven incorporated cities, including Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista are participants in this regional NCCP/HCP. Under the broad umbrella of the MHCP, each participating jurisdiction prepares a sub-area plan that complements the goals of the MHCP. The Service consults on each sub-area plan under section 7 of the Act to ensure they are consistent with the aims of the MHCP. For the City of Carlsbad, we approved their sub-area plan for the MHCP, the Habitat Management Plan (HMP), on November 12, 2004. The Riverside fairy shrimp is one of the species covered under the City of Carlsbad's HMP and we have determined the plan will provide for the long-term conservation of the species.

### *San Diego Multiple Species Conservation Plan*

The San Diego Multiple Species Conservation Plan (MSCP) effort encompasses more than 582,000 ac (236,000 ha) and reflects the cooperative efforts of the County and City of San Diego, ten additional city jurisdictions, and several independent special districts, the State, the building industry, and environmentalists. Over the permit term, the San Diego MSCP provides for the establishment of approximately 171,000 ac (69,573 ha) of preserve areas, and provides conservation benefits for 85 federally listed and sensitive species, including the Riverside fairy shrimp. Under the broad umbrella of the San Diego MSCP, each participating jurisdiction prepares a sub-area plan that implements the goals of the MSCP. The San Diego MSCP and its approved sub-area plans include measures to conserve known Riverside fairy shrimp populations on Otay Mesa. The Service consults on each sub-area plan under section 7 of the Act to ensure they are consistent with the aims of the San Diego MSCP. Currently, the County of San Diego, and the Cities of San Diego, La Mesa, Poway, Chula Vista, and the San Diego Gas and Electric (SDG&E) have approved sub-area plans under the San Diego MSCP. In addition to other Federal or State listed species and sensitive species, these sub-area plans provide long-term

conservation for the Riverside fairy shrimp within San Diego County. In addition, surveys for Riverside fairy shrimp are required in suitable habitat (i.e., vernal pools, ephemeral wetlands, and seasonally ponded areas).

The San Diego MSCP provides for avoidance of impacts to vernal pool habitat for the Riverside fairy shrimp both within and outside of existing and targeted reserve areas. These lands are to be permanently maintained and managed for the benefit of the Riverside fairy shrimp and other covered species. However, "take" is not included in the MSCP 10(a)(1)(B) permit. Thus, the incidental take permits issued to the City and County of San Diego under this plan do not allow for the take of Riverside fairy shrimp in natural vernal pool habitat. The eastern portion of Otay Mesa includes Major and Minor Amendment Areas, which require a special permitting process. Portions of essential habitat areas which the SDG&E company uses for their operational and maintenance activities that are located within the San Diego MSCP in southwestern San Diego County (Map Units 3 and 4), and within the SDG&E Sub-regional Plan have been excluded from critical habitat based on section 4(b)(2) of the Act. This sub-regional plan and the clarification document (July 2004) defines avoidance, minimization, and offsetting measures to be implemented by SDG&E for the operations and maintenance activities and future construction of new facilities and roads.

### *Relationship of Critical Habitat to HCPs in Development*

There are several HCPs and NCCP/HCPs in development which may ultimately include the Riverside fairy shrimp as a covered species. HCPs and NCCP/HCPs currently being developed include various sub-area plans under the MHCP in northwestern San Diego County, the South Orange County NCCP/HCP, and the Northern San Diego Multiple Species Conservation Program (MSCP North). These aforementioned HCPs, all of which are being prepared in cooperation with the State's NCCP program, have been determined to be significant planning efforts that will require the preparation of an Environmental Impact Report and Environmental Impact Statement, in compliance with the National Environmental Policy Act (40 CFR 1502.3) and the California Environmental Quality Act. Further, none of the HCPs under development have reached a point in their development where conservation measures for the Riverside fairy shrimp

have been adequately identified or their adequacy determined by the Service.

### **Economic Analysis**

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

Following the publication of the proposed critical habitat designation, we conducted an economic analysis to estimate the potential economic effect of the designation. The draft analysis was made available for public review on October 19, 2004 (69 FR 61461). We accepted comments on the draft analysis until November 18, 2004. The primary purpose of the economic analysis is to estimate the potential economic impacts associated with the designation of critical habitat for the Riverside fairy shrimp. This information is intended to assist the Secretary in making decisions about whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.

This economic analysis considers the economic efficiency effects that may result from the designation, including habitat protections that may be co-extensive with the listing of the species. It also addresses distribution of impacts, including an assessment of the potential effects on small entities and the energy industry. This information can be used by the Secretary to assess whether the effects of the designation might unduly burden a particular group or economic sector. To conduct the analysis, best available data were gathered from a variety of sources, including regional, city, and county planning agencies, land developers and conservancies, and project managers, including those for both preserves and planned developments.

This analysis focuses on the direct and indirect costs of the rule. However, economic impacts to land use activities can exist in the absence of critical habitat. These impacts may result from, for example, local zoning laws, State and natural resource laws, and enforceable management plans and best management practices applied by other State and Federal agencies. Economic impacts that result from these types of

protections are not included in the analysis as they are considered to be part of the regulatory and policy baseline.

The largest share of economic impacts identified by this analysis is to real estate development. Given the magnitude of forecast real estate development impacts in each category of impact, the analysis performs a screening test for efficiency and distributional effects that go beyond the impact on the project applicant or landowner only. That is, where changes in the regional output of housing, for instance, may be associated with Riverside fairy shrimp-related conservation activities, consumer and producer impacts for the entire housing market may exist. The screening test concludes that the amount of housing potentially removed from the market supply in each county is not a significant amount of the total supply of new housing. Under these conditions, significant consumer or producer surplus losses are not expected. However, for past impacts occurring on lands excluded from designation, the housing market in both San Diego County may have experienced reduced output or increased prices as a result of Riverside fairy shrimp-related conservation activities.

We anticipate no impacts to national security, Tribal lands, partnerships, or habitat conservation plans resulting from this critical habitat designation. Our economic analysis indicates an overall low cost resulting from the designation.

A copy of the final economic analysis with supporting documents are included in our administrative record and may be obtained by contacting U.S. Fish and Wildlife Service, Branch of Endangered Species (see **ADDRESSES** section), or by downloading it from the Internet at <http://carlsbad.fws.gov>.

### Required Determinations

#### *Regulatory Planning and Review*

In accordance with Executive Order 12866, this document is a significant rule in that it may raise novel legal and policy issues, but will not have an annual effect on the economy of \$100 million or more or affect the economy in a material way. Due to the tight timeline for publication in the **Federal Register**, the Office of Management and Budget (OMB) has not formally reviewed this rule. As explained above, we prepared an economic analysis of this action. We used this analysis to meet the requirement of Section 4(b)(2) of the Act to determine the economic consequences of designating the specific

areas as critical habitat. We also used it to help determine whether to exclude any area from critical habitat, as provided for under section 4(b)(2), if we determine that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless we determine, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species.

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

Under the Regulatory Flexibility Act (RFA) (as amended by the Small Business Regulatory Enforcement Fairness Act of 1996), whenever an agency is required to 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 (*i.e.*, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The Small Business Regulatory Enforcement Fairness Act amended the RFA to require Federal agencies to provide a statement of factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. The Small Business Regulatory Enforcement Fairness Act also amended the RFA to require a certification statement.

Small entities include small organizations, such as independent non-profit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts to these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the types of project modifications that may result. In

general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

To determine if the rule could significantly affect a substantial number of small entities, we consider the number of small entities affected within particular types of economic activities (*e.g.*, housing development, grazing, oil and gas production, timber harvesting). We apply the "substantial number" test individually to each industry to determine if certification is appropriate. However, the Small Business Regulatory Enforcement Fairness Act does not explicitly define "substantial number" or "significant economic impact." Consequently, to assess whether a "substantial number" of small entities is affected by this designation, this analysis considers the relative number of small entities likely to be impacted in an area. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the number of small entities potentially affected, we also consider whether their activities have any Federal involvement.

Designation of critical habitat only affects activities conducted, funded, or permitted by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under Section 7 of the Act on activities they fund, permit, or implement that may affect Riverside fairy shrimp. Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinstate consultation for ongoing Federal activities.

The draft economic analysis (September 15, 2004) was based on acreages from the proposed rule and predicts potential costs of the proposed designation to small businesses. Based on this analysis, the number of small land development business affected annually would be 7.1 (0.3 percent of total small businesses) for Los Angeles County, 5.6 (0.5 percent of total small businesses) for Orange County, and 8.0 (0.9 percent of total small businesses) for San Diego County. Over 20 years, the total impact on small land development businesses ranged from \$3,534,420 to \$18,969,901 for Los Angeles County,

\$10,705,409 to \$58,439,095 for Orange County, and \$2,796,785 to \$15,206,384 for San Diego County. The annual impact on revenue per affected business per year ranged from \$5,000 to \$26,700 for Los Angeles County, \$19,000 to \$104,700 for Orange County, and \$3,500 to \$19,000 for San Diego County.

Between 2005–2024, the economic analysis predicts potential cost from the designation of critical habitat for the Riverside fairy shrimp on real estate development at Carlsberg Ranch/Tierra Rajada (Sub-Units 1A and 1B) is \$376,000; to public park improvements at O'Neill Park (Unit 2) is \$28,000; to rail construction at the Poinsettia Lane Train Station (Unit 4) is \$28,000; and no additional economic impact on lands owned by the Sweetwater Union High School District (Unit 5) because these lands have already been conserved as an offsetting measure for the development of the Otay Mesa High School. Based on this data from the proposed rule, and the additional exclusions of units made in this final rulemaking, we have determined that this designation would not affect a substantial number of small land development companies. Further, we have determined that this designation would also not result in a significant effect to the annual sales of those small businesses impacted by this designation. As such, we are certifying that this designation of critical habitat would not result in a significant economic impact on a substantial number of small entities.

#### *Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 801 et seq.)*

Under the Small Business Regulatory Enforcement Fairness Act, this rule is not a major rule. Our detailed assessment of the economic effects of this designation is described in the economic analysis. Based on the effects identified in the economic analysis, we believe that this rule will not have an annual effect on the economy of \$100 million or more, will not cause a major increase in costs or prices for consumers, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Refer to the final economic analysis for a discussion of the effects of this determination.

#### *Executive Order 13211*

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when

undertaking certain actions. This final rule to designate critical habitat for the 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.

#### *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:

(a) This rule will 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, 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 (AFDC) 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 who receive Federal funding, assistance, permits or 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.

(b) We do not believe that this rule will significantly or uniquely affect small governments because it will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a "significant regulatory action" under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments. As such, Small Government Agency Plan is not required.

#### *Federalism*

In accordance with Executive Order 13132, the rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with the Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this final 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 in that the areas essential to the conservation of the species are more clearly defined, and the primary constituent elements of the habitat necessary to the survival of the species are specifically identified. While making this definition and identification does not alter where and what federally sponsored activities may occur, it may assist these local governments in long-range planning (rather than waiting for case-by-case section 7 consultations to occur).

#### *Civil Justice Reform*

In accordance with Executive Order 12988, the Office of the Solicitor has 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 are designating critical habitat in accordance with the provisions of the Endangered Species Act. This final rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of the Riverside fairy shrimp.

*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. 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 (NEPA)*

It is our position that, outside the Tenth Circuit, we do not need to prepare environmental analyses as defined by the NEPA in connection with designating critical habitat under the Endangered Species Act of 1973, as amended. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This assertion was upheld in the courts of the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. Ore. 1995), cert. denied 116 S. Ct. 698 (1996)). The final environmental assessment is available upon request from the Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Carlsbad, California 92009 (telephone 760/431-9440), or on our Web site at <http://carlsbad.fws.gov>.

*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, and the Department of Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis.

Historical records indicate that there were two vernal pools on or near Tribal lands of the Pechanga Band of Luiseño Indians that contained Riverside fairy

shrimp (Eriksen 1988). After reviewing aerial photographs of the area and meeting with the Tribe's Environmental Coordinator in March 2004, we were unable to confirm these occurrences. It is possible that additional survey work would allow a better documentation of the possible species occurrence. However, at this time we have insufficient information on the occurrence of the Riverside fairy shrimp on Tribal lands of the Pechanga Band of Luiseño Indians. Therefore, critical habitat for the Riverside fairy shrimp has not been designated on Tribal lands.

**References Cited**

A complete list of all references cited in this rulemaking is available upon request from the Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Carlsbad, California 92009 (telephone 760/431-9440).

**Author(s)**

The primary author of this package is the Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Carlsbad, California 92009.

**List of Subjects in 50 CFR Part 17**

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

**A Note About Critical Habitat Unit Numbering**

A large number of units in the proposed rule have been exempted or excluded from designation in the final rule. In order to understand the relationship between sub-unit and unit numbers in the proposed rule (which have been retained in the preamble of this document), and sub-unit and unit numbers in the final designation (*i.e.*, in the Regulations Promulgation portion of this document), we provide the following crosswalk: Proposed Sub-units 1A and 1B in the proposed rule and preamble remain as Sub-units 1A and 1B in the Regulations Promulgation section. Sub-unit 2D in the proposed rule and preamble is Unit 2 in the Regulations Promulgation section. Sub-unit 4C in the proposed rule and preamble is Unit 3 in the Regulations Promulgation section. Sub-unit 5A in the proposed rule and preamble is Unit 4 in the Regulations Promulgation section.

**Regulation Promulgation**

■ Accordingly, amend part 17, subchapter B of chapter I, title 50 of the

Code of Federal Regulations, as set forth below:

**PART 17—[AMENDED]**

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

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

■ 2. In § 17.95(h), revise the entry for the Riverside fairy shrimp (*Streptocephalus woottoni*) under "CRUSTACEANS" to read as follows:

**§ 17.95 Critical habitat—fish and wildlife.**

\* \* \* \* \*  
(h) *Crustaceans.*  
\* \* \* \* \*

Riverside Fairy Shrimp  
(*Streptocephalus woottoni*)

(1) Critical habitat units for Ventura, Orange, and San Diego Counties, California, are depicted on the maps that follow.

(2) Critical habitat consists of vernal pools, vernal pool complexes, and ephemeral ponds and depressions and their associated surrounding upslope areas with the soil and hydrologic regimes indicated on the maps below and in the legal descriptions.

(3) Within these areas, the primary constituent elements for the Riverside fairy shrimp are those habitat components that are essential for the primary biological needs of foraging, sheltering, reproduction, and dispersal. The primary constituent elements are found in those areas that support vernal pools or other ephemeral ponds and depressions, and their associated watersheds. The primary constituent elements determined essential to the conservation of Riverside fairy shrimp are:

(i) Small to large pools or pool complexes that have the appropriate size and volume, local climate, topography, water temperature, water chemistry, soil conditions, and length of time of inundation with water necessary for Riverside fairy shrimp incubation and reproduction, as well as dry periods necessary to provide the conditions to maintain a dormant and viable cyst bank. Specifically, the conditions necessary to allow for successful reproduction of Riverside fairy shrimp fall within the following ranges:

(A) Moderate to deep depths ranging from 10 in (25 cm) to 5–10 ft (1.5–3 m);

(B) Pool or pond inundation lasting for a minimum of 2 months to 5–8 months or more, *i.e.*, a sufficient wet period in winter and spring months to allow the Riverside fairy shrimp to hatch, mature, and reproduce, followed

by a dry period prior to the next winter and spring rains;

(1) Water temperatures within the range of 41–77 degrees F (5–25 degrees C);

(2) Water chemistry with low total dissolved solids and alkalinity (means of 77 and 65 parts per million, respectively); and

(3) Water pH within a range of 6.4–7.1.

(ii) The immediately surrounding upslope area that provides the pool or pool complex with the following:

(A) Hydrologic flows, both above-ground (sheet flow) and sub-surface through soil or sediments, to fill the pools and maintain the seasonal cycle of ponding and drying, at the appropriate rates;

(B) A source of detritus and nutrients;

(C) Sources of soil, ion and mineral transport to the pool or pool complex to provide and maintain the appropriate water chemistry conditions and impermeability of the pool basin(s); and

(D) Habitat for animals that act as dispersers of cysts and vernal pool plant seeds or pollen, as well as habitat for the

pollinators of the vernal pool plants that also form an integral part of the vernal pool's ecology.

(iii) The size of the immediately surrounding upslope area varies greatly depending on a number of factors and has been assessed for each sub-unit. Factors that affect the size of the surrounding upslope area include surface and sub-surface hydrology, the topography of the area surrounding the pool or pools, the vegetative coverage, and the soil and bedrock substrate in the area. The upslope areas designated vary from a few acres to over 100 ac (40 ha) in size.

(iv) Soils in the summit, rim and basin geomorphic positions with a clay component and/or an impermeable surface or subsurface layer that provide a unique assemblage of nutrient availability and redox conditions known to support vernal pool habitat. The biogeochemical environment strongly influences hydrologic properties and plays a critical role in nutrient cycling in vernal pool ecosystems (Hobson and Dahlgren 1998).

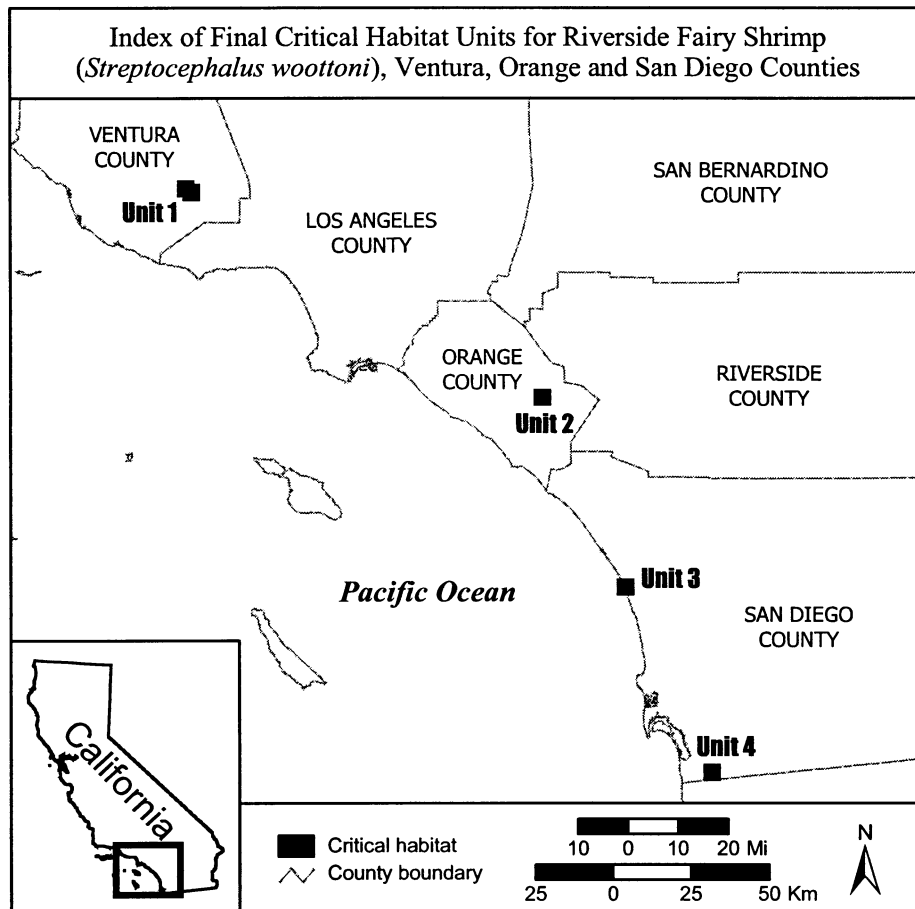
(v) The matrix of vernal pools/ephemeral wetlands, the immediate upslope areas, upland habitats, and underlying soil substrates form hydrological and ecologically functional units. These features and the lands that they represent are essential to the conservation of the Riverside fairy shrimp. All lands identified as essential and proposed as critical habitat contain one or more of the primary constituent elements for the Riverside fairy shrimp.

(4) Critical habitat does not include man-made structures existing on the effective date of this rule and not containing one or more of the primary constituent elements, such as buildings, aqueducts, airports, and roads, and the land on which such structures are located.

(5) Data layers defining map units were created on a base of USGS 7.5' quadrangles, and critical habitat units were then mapped using Universal Transverse Mercator (UTM) coordinates.

(6) Index map of critical habitat units for the Riverside fairy shrimp follows:

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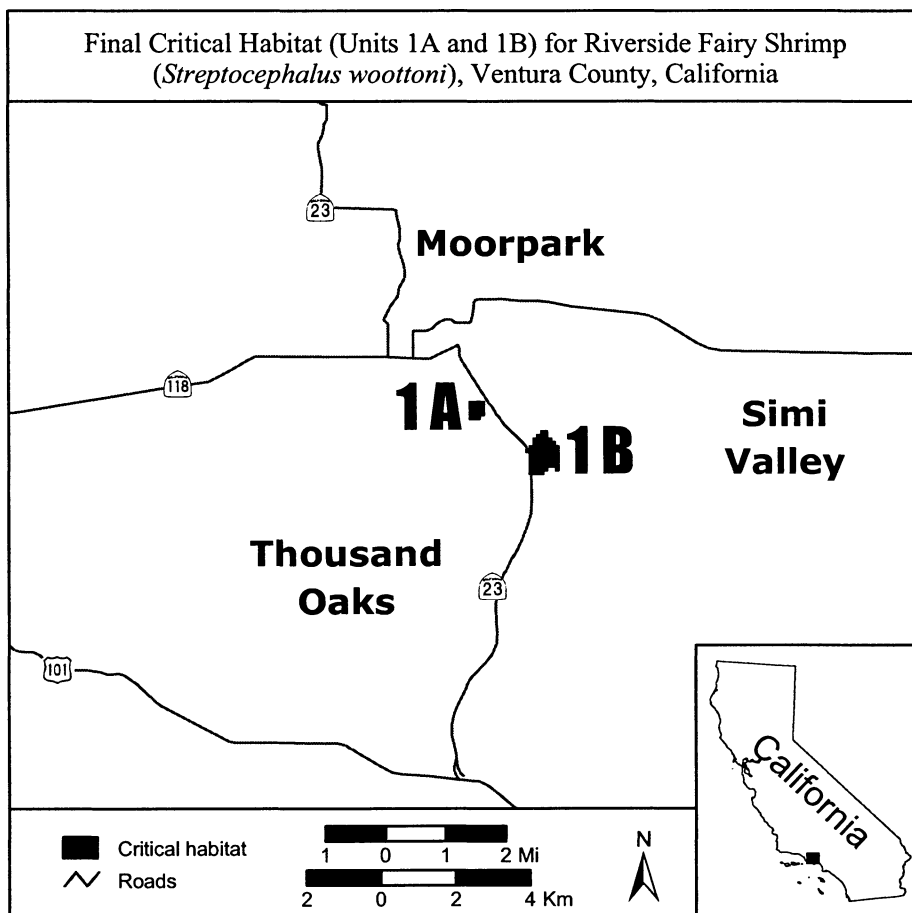


(7) Unit 1: Ventura County, California.  
 (i) Sub-unit 1A: City of Moorpark Greenbelt, north Tierra Rejada Valley from USGS 1:24,000 quadrangle map Simi Valley West. Lands bounded by the following UTM NAD27 coordinates (E, N): 329000, 3793300; 329400, 3793300; 329400, 3792900; 329300, 3792900; 329300, 3792800; 329000, 3792800; 329000, 3793300.

(ii) Sub-unit 1B: south Tierra Rejada Valley. Lands bounded by the following UTM NAD27 coordinates (E, N): 330900, 3792500; 331100, 3792500; 331100, 3792300; 331200, 3792300; 331200, 3792200; 331300, 3792200; 331300, 3792100; 331400, 3792100; 331400, 3791400; 331300, 3791400; 331300, 3791500; 331100, 3791500; 331100, 3791400; 331000, 3791400;

331000, 3791300; 330600, 3791300; 330600, 3791900; 330500, 3791900; 330500, 3792000; 330600, 3792000; 330600, 3792100; 330700, 3792100; 330700, 3792300; 330800, 3792300; 330800, 3792400; 330900, 3792400; 330900, 3792500.

(iii) **Note:** Map of critical habitat Sub-units 1A and 1B for the Riverside fairy shrimp follows:



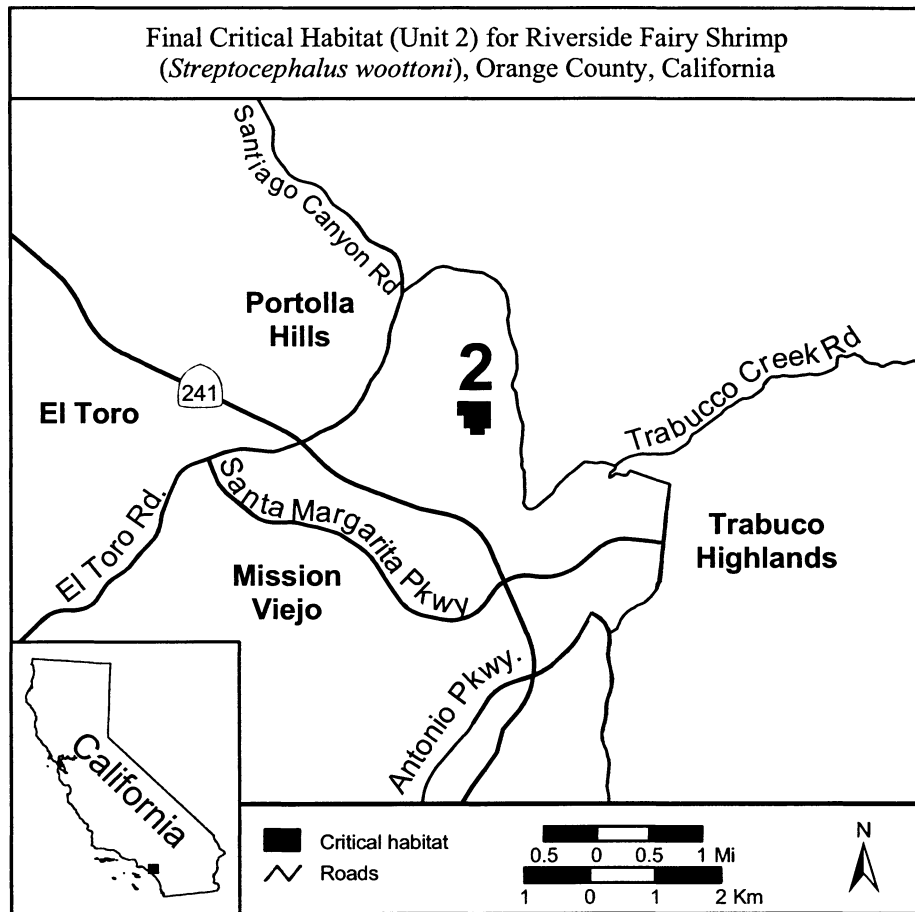
(8) Unit 2: Orange County, California. From USGS 1:24,000 quadrangle map Santiago Peak.

(i) Unit 2: Land within O'Neill Regional Park. Lands bounded by the

following UTM NAD27 coordinates (E, N): 443400, 3725300; 443900, 3725300; 443900, 3724900; 443800, 3724900; 443800, 3724800; 443600, 3724800; 443600, 3724900; 443500, 3724900;

443500, 3725100; 443400, 3725100; 443400, 3725300.

(ii) **Note:** Map of critical habitat Unit 2 for the Riverside fairy shrimp follows:



(9) Unit 3: North San Diego County, San Diego County, California. From USGS 1:24,000 quadrangle map Encinitas.

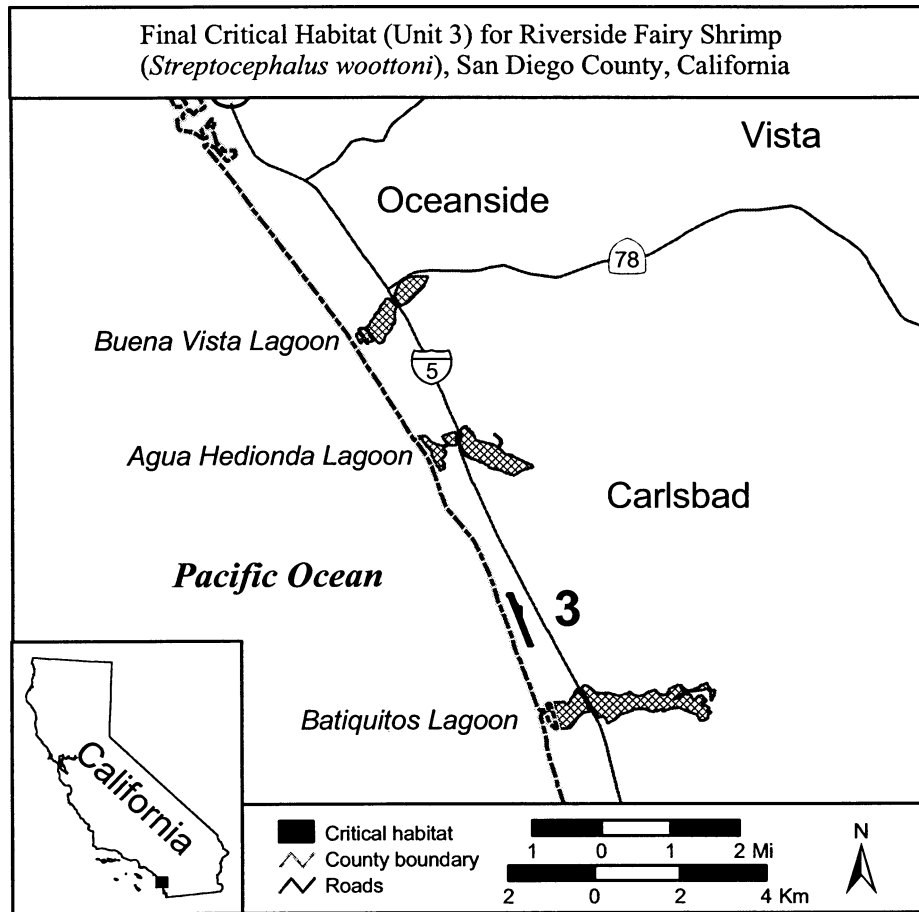
(i) Unit 3: Land near Poinsettia Lane Commuter Station, Carlsbad Lands bounded by the following UTM NAD27 coordinates (E, N): 470100, 3663600; thence east to the North San Diego County Transit (NSDCT) boundary at UTM NAD27 y-coordinate 3663600; thence south following the NSDCT boundary to UTM NAD27 x-coordinate

470300; thence south to UTM NAD27 coordinates 470300, 3663300; thence east to the NSDCT boundary at UTM NAD27 y-coordinate 3663300; thence southeast following the NSDCT boundary lands to UTM NAD 27 x-coordinate 470400; thence south following UTM NAD27 x-coordinate 470400 to the NSDCT boundary; thence west and south following the NSDCT boundary to UTM NAD27 y-coordinate 3662400; thence west following UTM NAD27 y-coordinate 3662400 to the

NSDCT boundary; thence northwest following the NSDCT boundary to UTM NAD27 x-coordinate 470400; thence north along UTM NAD27 x-coordinate 470400 to UTM NAD27 coordinates 470400, 3662900; thence west to NSDCT lands at UTM NAD 27 y-coordinate 3662900; thence northwest following the NSDCT boundary returning to UTM NAD27 coordinates 470100, 3663600.

(ii) **Note:** Map of critical habitat Unit 3 for the Riverside fairy shrimp follows:





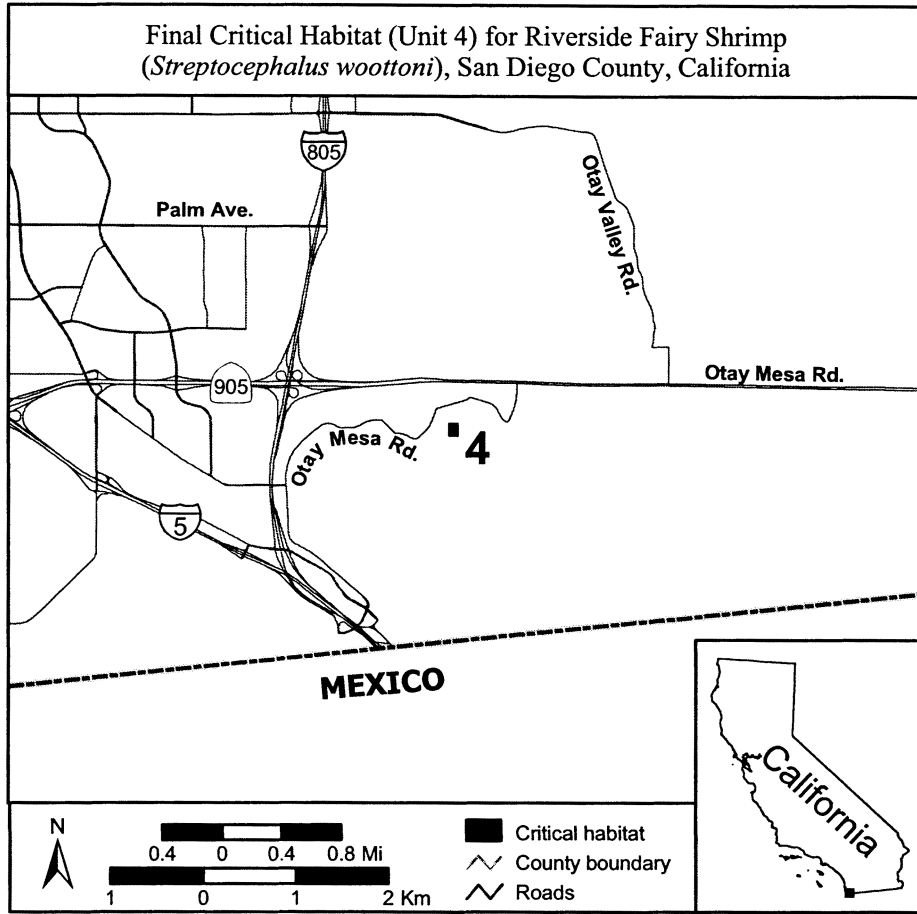
(10) Map Unit 4: South San Diego County, San Diego, California. From USGS 1:24,000 quadrangle map Imperial Beach.

(i) Unit 4: Sweetwater Union High School District lands on Otay Mesa. Lands bounded by the following UTM

NAD27 coordinates (E, N): 498000, 3602800; 498100, 3602800; thence south to the Sweetwater Union High School District (SUHSD) boundary at UTM NAD27 x-coordinate 498100; thence west following the SUHSD boundary to

UTM NAD27 x-coordinate 498000; thence north following UTM NAD27 x-coordinate 498000 returning to UTM NAD27 coordinates 498000, 3602800.

(ii) **Note:** Map of critical habitat Unit 4 for the Riverside fairy shrimp follows:



\* \* \* \* \*

Dated: March 31, 2005.  
**Craig Manson,**  
*Assistant Secretary for Fish and Wildlife and  
Parks.*  
[FR Doc. 05-6825 Filed 4-11-05; 8:45 am]  
**BILLING CODE 4310-55-C**