DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2010–0085; MO 92210–0–0009–B4]

RIN 1018–AX12

Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to designate critical habitat for the Chiricahua leopard frog (*Lithobates chiricahuensis*) under the Endangered Species Act of 1973, as amended. In total, we are proposing to designate approximately 11,136 acres (4,510 hectares) as critical habitat for the Chiricahua leopard frog. The proposed critical habitat is located in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai Counties, Arizona; and Catron, Hidalgo, Grant, Sierra, and Socorro Counties, New Mexico. In addition, because of a taxonomic revision of the Chiricahua leopard frog, we are reassessing the status of and threats to the currently described species *Lithobates chiricahuensis* and proposing the listing as threatened of the currently described species.

DATES: We will consider comments received or postmarked on or before May 16, 2011. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by April 29, 2011.

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

- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the instructions for submitting comments on Docket No. FWS–R2–ES–2010–0085.
- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: Docket No. FWS–R2–ES–2010–0085; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

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

FOR FURTHER INFORMATION CONTACT: Steve Spangle, Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021; telephone: 602/242–0210; facsimile: 602/242–2513. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION: Due to a taxonomic revision of the Chiricahua leopard frog, we must reassess the status of and threats to the currently described *Lithobates chiricahuensis.* Therefore, this document consists of: (1) A proposed rule to list the Chiricahua leopard frog (*Lithobates chiricahuensis*) as threatened; and (2) a proposed rule to designate critical habitat for the Chiricahua leopard frog.

Previous Federal Actions

We published a proposed rule to list the Chiricahua leopard frog as threatened in the **Federal Register** on June 14, 2000 (65 FR 37343). We published a final rule listing the species as threatened on June 13, 2002 (67 FR 40790). Included in the final rule was a special rule (*see* 50 CFR 17.43(b)) to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). For further information on actions associated with listing the species, please *see* the final listing rule (67 FR 40790; June 13, 2002).

In a May 6, 2009, order from the Arizona District Court, the Secretary of the Interior was required to publish a critical habitat prudency determination for the Chiricahua leopard frog and, if found prudent, a proposed rule to designate critical habitat by December 8, 2010. Because of unforeseen delays related to species taxonomic issues, which required an inclusion of a threats analysis, we requested a 3-month extension to the court-ordered deadlines for both the proposed and final rules. On November 24, 2010, the extension was granted and new deadlines of March 8, 2011, for the proposed rule and March 8, 2012, for the final rule were established for completing and submitting the critical habitat rules to the **Federal Register**. This proposed rule is published in accordance with the Arizona District Court's ruling.

Public Comments

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

(1) Information about the status of the species, especially the Ramsey Canyon portion of the range, including:

(a) Genetics and taxonomy;

(b) Historical and current range, including distribution patterns;

(c) Historical and current population levels, and current and projected trends; and

(d) Past and ongoing conservation measures for the species, its habitat, or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act, which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to Chiricahua leopard frog and regulations that may be addressing those threats.

(4) Additional information concerning the range, distribution, and population size of Chiricahua leopard frog, including the locations of any additional populations.

(5) Any information on the biological or ecological requirements of Chiricahua leopard frog.

(6) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act, including whether there are threats to the species from human activities, how the designation may ameliorate or worsen those threats, and if any potential increase in threats outweighs the benefits of designation such that the designation of critical habitat may not be prudent.

(7) Specific information on:

- The amount and distribution of the Chiricahua leopard frog's habitat;
- What areas occupied at the time of listing and that contain features essential to the conservation of the species should be included in the designation, and why;
- Special management considerations or protections that the physical and

biological features essential to the conservation of the Chiricahua leopard frog that have been identified in this proposal may require, including managing for the potential effects of climate change; and

• What areas not occupied at the time of listing are essential for the conservation of the species, and why.

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

(9) Any probable economic, national security, or other relevant impacts of designating as critical habitat any area that may be included in the final designation. We are particularly interested in any impacts on small entities or families, and the benefits of including or excluding areas that exhibit these impacts.

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

(11) Information on whether the benefits of an exclusion of any particular area outweigh the benefits of inclusion under section 4(b)(2) of the Act.

(12) Information on the projected and reasonably likely impacts of climate change on the Chiricahua leopard frog and the critical habitat areas we are proposing.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not accept comments sent by e-mail or fax or to an address not listed in the **ADDRESSES** section. We will not consider hand-delivered comments that we do not receive, or mailed comments that are not postmarked, by the date specified in the **DATES** section.

We will post your entire comment—including any personal identifying information you provide—on *http://www.regulations.gov.* If you provide personal identifying information, such as your street address, phone number, or e-mail address, in your written comments, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so.

A draft economic analysis and draft environmental assessment for this action will be prepared and made available to the public for review. At that time, we will reopen the comment period on this proposed rule and concurrently solicit comments on the draft economic analysis and draft environmental assessment.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on the Internet at *http://www.regulations.gov,* at Docket No. FWS–R2–ES–2010–0085, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021.

Proposed Threatened Status for the Chiricahua Leopard Frog

Background

Due to a taxonomic revision of the Chiricahua leopard frog, we must reassess the status of and threats to the currently described species. It is our intent to discuss below only those topics directly relevant to the listing of the Chiricahua leopard frog as threatened in this section of the proposed rule. For more information on the Chiricahua leopard frog, refer to the final listing rule published in the **Federal Register** on June 13, 2002 (67 FR 40790) and the species' recovery plan (Service 2007).

Species Information

Description

When we listed the Chiricahua leopard frog as a threatened species on June 13, 2002 (67 FR 40790), we recognized the scientific name as *Rana chiricahuensis.* Since that time, the genus name *Lithobates* was proposed by Frost *et al.* (2006, p. 249) and adopted by the Society for the Study of Amphibians and Reptiles in their most recent listing of scientific and standard English names of North American amphibians and reptiles north of Mexico (Crother 2008, p. 7). With the publication of this proposed rule, we officially accept the new scientific name of the Chiricahua leopard frog as *Lithobates chiricahuensis.*

In addition, the Ramsey Canyon leopard frog (*Lithobates subaquavocalis*), found on the eastern slopes of the Huachuca Mountains, Cochise County, Arizona, has recently been subsumed into *L. chiricahuensis* (Crother 2008, p. 7) and was noted by the Service as part of the listed entity in a 90-day finding on 192 species from a petition to list 475 species (74 FR 66866; December 16, 2009). Goldberg *et al.* (2004, pp. 313–319) examined the relationships between the Ramsey Canyon leopard frog (*L. subaquavocalis*) and the Chiricahua leopard frog (*L. chiricahuensis*). Genetic analysis showed no evidence that Ramsey Canyon leopard frog was a separate species from the Chiricahua leopard frog (Goldberg *et al.* 2004, p. 315). The Society for the Study of Amphibians and Reptiles later adopted these leopard frogs as the same species, *L. chiricahuensis* (Crother 2008, p. 7). Therefore, we no longer recognize the Ramsey Canyon leopard frog (*L. subaquavocalis*) as a distinct species and consider it to be synonymous with the Chiricahua leopard frog (*L. chiricahuensis*). In this proposed rule, we present our analysis of the threats to the species given this taxonomic revision to determine if it is appropriate to list the Chiricahua leopard frog as threatened throughout its range (*see* Summary of Factors Affecting the Species below).

Northern populations of the Chiricahua leopard frog in the Mogollon Rim region of east-central Arizona east to the eastern bajada of the Black Range in New Mexico are physically separated from populations to the south. Previous work had suggested these two separate divisions might be distinct species (Platz and Grudzien 1999, p. 51). Goldberg *et al.* (2004, p. 315) demonstrated that frogs from these two regions showed a 2.4 percent average divergence in mitochondrial DNA sequences. However, more recent work using both mitochondrial DNA and nuclear microsatellites from frog tissues throughout the range of the species provides no evidence of multiple taxa within what we now consider to be the Chiricahua leopard frog (Herrman *et al.* 2009, p. 18).

The Chiricahua leopard frog is distinguished from other members of the leopard frog complex by a combination of characters, including a distinctive pattern on the rear of the thigh consisting of small, raised, cream-colored spots or tubercles (wart-like projections) on a dark background; folds on the back and sides that, towards the rear, are interrupted and deflected towards the middle of the body; stocky body proportions; relatively rough skin on the back and sides; eyes that are positioned relatively high on the head; and often green coloration on the head and back (Platz and Mecham 1979, p. 347.1; Degenhardt *et al.* 1996, pp. 85–87). The species also has a distinctive call consisting of a relatively long snore of 1 to 2 seconds in duration (Platz and Mecham 1979, p. 347.1; Davidson 1996, tracks 58, 59). Overall body lengths of adults range from approximately 2.1 inches (in) (5.3 centimeters (cm)) to 5.4 in (13.7 cm) (Platz and Mecham 1979, p. 347.1; Stebbins 2003, pp. 236–237).

Life History

The life history of the Chiricahua leopard frog can be characterized as a complex life cycle, consisting of eggs and larvae that are entirely aquatic and adults who are primarily aquatic but may be terrestrial at times. Egg masses of Chiricahua leopard frogs have been reported in all months, but reports of egg laying (oviposition) in June and November through January are uncommon (Zweifel 1968, pp. 45–46; Frost and Bagnara 1977, p. 449; Frost and Platz 1983, p. 67; Scott and Jennings 1985, p. 16; Sredl and Jennings 2005, p. 547). Frost and Platz (1983, p. 67) divided egg-laying activity into two distinct periods with respect to elevation. Populations at elevations below 5,900 feet (ft) (1,798 meters (m)) tended to lay eggs from spring through late summer, with most activity taking place before June. Populations above 5,900 ft (1,798 m) bred in June, July, and August. Scott and Jennings (1985, p. 16) found a similar seasonal pattern of reproductive activity in New Mexico (February through September), as did Frost and Platz (1983, p. 67), although they did not note elevational differences. Additionally, Scott and Jennings (1985, p. 16) noted reduced egg laying in May and June. Zweifel (1968, p. 45) noted that breeding in the early part of the year appeared to be limited to sites where water temperatures do not get too low, such as spring-fed sites. Frogs at warm springs may lay eggs year-round (Scott and Jennings 1985, p. 16). Also, females attach spherical masses of fertilized eggs, ranging in number from 300 to 1,485 eggs, to submerged vegetation (Sredl and Jennings 2005, p. 547).

Eggs hatch in approximately 8 to 14 days depending on temperature (Sredl and Jennings 2005, p. 547). After hatching, tadpoles remain in the water, where they feed and grow. Tadpoles turn into juvenile frogs in 3 to 9 months (Sredl and Jennings 2005, p. 547). Juvenile frogs are typically 1.4 to 1.6 in (35 to 40 millimeters (mm)) in overall body length. Males reach sexual maturity at 2.1 to 2.2 in (5.3 to 5.6 cm), a size they can attain in less than a year (Sredl and Jennings 2005, p. 548).

The diet of the Chiricahua leopard frog includes primarily invertebrates such as beetles, true bugs, and flies, but fish and snails are also taken (Christman and Cummer 2006, pp. 9–18). An adult was documented eating a hummingbird in southeastern Arizona (Field *et al.* 2003, p. 235). Chiricahua leopard frogs can be found active both day and night, but adults tend to be active more at night than juveniles (Sredl and Jennings 2005, p. 547). Chiricahua leopard frogs presumably experience very high mortality (greater than 90 percent) in the egg and early tadpole stages, high mortality when the tadpole turns into a juvenile frog, and then relatively low mortality when the frogs are adults (Zug *et al.* 2001, p. 303; Service 2007, pp. C10–C12). Under ideal conditions, Chiricahua leopard frogs may live as long as 10 years in the wild (Platz *et al.* 1997, p. 553).

Geographical Range and Distribution

The range of the Chiricahua leopard frog includes central and southeastern Arizona; west-central and southwestern New Mexico; and in Mexico, northeastern Sonora, the Sierra Madre Occidental of northwestern and west-central Chihuahua, and possibly as far south as northern Durango (Platz and Mecham 1984, p. 347.1; Degenhardt *et al.* 1996, p. 87; Sredl and Jennings 2005, p. 546; Brennan and Holycross 2006, p. 44; Lemos-Espinal and Smith 2007, pp. 287, 579; Rorabaugh 2008, p. 32). The distribution of the species in Mexico is unclear due to limited survey work and the presence of closely related taxa (especially *Lithobates lemosespinali* (no common name)) in the southern part of the range of the Chiricahua leopard frog. Based on 2009 data, the species still occurs in most major drainages in Arizona and New Mexico where it occurred historically; the exception to this is the Little Colorado River drainage in Arizona. The species is apparently extirpated from the Chiricahua Mountains of Arizona, which harbored the type locality. In Arizona and New Mexico, the species likely occurs at about 14 and 16 to 19 percent of its historical localities, respectively (Service 2007, p. 6).

Habitat

Within its geographical range, breeding populations of this species historically inhabited a variety of aquatic habitats (Service 2007, p. 3); however, the species is now limited primarily to headwater streams and springs, and livestock tanks into which nonnative predators (e.g., sportfishes, American bullfrogs (*Lithobates catesbeianus*), crayfish (*Orconectes virilis*), barred tiger salamanders (*Ambystoma mavortium mavortium*)) have not yet invaded or been introduced, or where the numbers of nonnative predators are low and habitats are complex, allowing Chiricahua leopard frogs to coexist with these species (Service 2007, p. 15). The large valley-bottom cienegas (mid-elevation wetland communities typically surrounded by relatively arid environments), rivers, and lakes where the species occurred historically are populated with nonnative predators at densities with which the Chiricahua leopard frog cannot coexist.

Dispersal

Although one of the most aquatic of southwestern leopard frogs (Degenhardt *et al.* 1996, p. 86), Chiricahua leopard frogs are known to move among aquatic sites, and such movements are crucial for conserving metapopulations. A metapopulation is a set of local populations that interact via individuals moving between local populations (Hanski and Gilpin 1991, p. 7). If local populations are extirpated through drought, disease, or other factors, the populations can be recolonized via dispersal from adjacent populations. Hence, the long-term viability of metapopulations may be enhanced over that of isolated populations, even though local populations experience periodic extirpations. To determine whether metapopulation structure exists in a specific group of local populations, the dispersal capabilities of the frog must be understood. Based on a review of available information, the recovery plan (Service 2007, pp. D–2, D–3, K–3) provides a rule of thumb on dispersal capabilities. Chiricahua leopard frogs are reasonably likely to disperse 1.0 mile (mi) (1.6 kilometers (km)) overland, 3.0 mi (4.8 km) along ephemeral or intermittent drainages (water existing only briefly), and 5.0 mi (8.0 km) along perennial water courses (water present at all times of the year), or some combination thereof not to exceed 5.0 mi (8.0 km). This is often referred to as the "1–3–5 rule" of dispersal.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants (Lists). A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. The final listing rule for the Chiricahua leopard frog (67 FR 40790; June 13, 2002) contained a discussion of these five factors, as did the proposed

rule (65 FR 37343; June 14, 2000). Threats discussed in the previous listing rules are still affecting the Chiricahua leopard frog today. Please refer to these rules or the Chiricahua leopard frog recovery plan (Service 2007; pp. 18–45) for a more detailed analysis of the threats affecting the species. Because we no longer recognize the Ramsey Canyon leopard frog as a distinct species and consider it to be synonymous with the Chiricahua leopard frog, we reanalyzed factors relevant to the entire listed entity below. However, because all the threats from the previous rules still apply, we provide a summary of those below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The recovery plan lists the following threats to habitat or range of the Chiricahua leopard frog: Mining, including mining-related contaminants; other contaminants; dams; diversions; stream channelization; groundwater pumping; woodcutting; urban and agricultural development; road construction; grazing by livestock and elk; climate change; and altered fire regimes (Service 2007, pp. 31–37). Although these threats are widespread and varied, a threats assessment that was accomplished as part of the recovery plan showed chytridiomycosis and predation by nonnative species as consistently more important threats than these habitat-based factors (Service 2007, pp. 20–27).

Chiricahua leopard frogs are fairly tolerant of variations in water quality, but likely do not persist in waters severely polluted with cattle feces (Service 2007, p. 34), or runoff from mine tailings or leach ponds (Rathbun 1969, pp. 1–3; U.S. Bureau of Land Management 1998, p. 26; Service 2007, p. 36). Furthermore, variation in pH, ultraviolet radiation, and temperature, as well as predation stress, can alter the potency of chemical effects (Akins and Wofford 1999, p. 107; Monson *et al.* 1999, pp. 309–311; Reylea 2004, pp. 1081–1084). Chemicals may also serve as a stressor that makes frogs more susceptible to disease, such as chytridiomycosis (*see* discussion under Factor C below) (Parris and Baud 2004, p. 344). The effects of pesticides and other chemicals on amphibians can be complex because of indirect effects on the amphibian environment, direct lethal and sublethal effects on individuals, and interactions between contaminants and other factors associated with amphibian decline (Sparling 2003, pp. 1101–1120; Reylea 2008, pp. 367–374).

A copper mine (the Rosemont Mine) has been proposed in the northeastern portion of the Santa Rita Mountains, Pima County, Arizona (recovery unit 2), the footprint of which includes several sites recently occupied by Chiricahua leopard frogs. Recent research indicates that Chiricahua leopard frog tadpoles are sensitive to cadmium and copper above certain levels (Little and Calfee 2008, pp. 6–10), making the introduction of copper into Chiricahua leopard frog habitat a possible significant threat. No analyses have been conducted yet to quantify how the frogs and their habitats may be affected in that region, which potentially includes the Bureau of Land Management's Las Cienegas National Riparian Conservation Area; however, a draft environmental impact statement will likely be published in 2011.

The Southwest Endangered Species Act Team (2008, pp. iii-IV–5) published "Chiricahua leopard frog (*Lithobates* [*Rana*] *chiricahuensis*) considerations for making effects determinations and recommendations for reducing and avoiding adverse effects," which included detailed descriptions of how many different types of projects, including fire management, construction, native fish recovery, and livestock management projects, may affect the frog and its habitat. This document, in addition to the recovery plan (Service 2007, pp. 31–37), can be referenced for more information about habitat-related threats to. Habitat-related threats to the Chiricahua leopard frog, while not the most important factors threatening the species, nevertheless affect the Chiricahua leopard frog such that the species is likely to become endangered within the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Even though the final listing rule (67 FR 40790; June 13, 2002) discussed over-collection for the pet trade as a possible threat, we have no information that leads us to believe that overutilization for commercial, recreational, scientific, or educational purposes is currently a threat to the Chiricahua leopard frog.

C. Disease and Predation

The threats assessment conducted during the preparation of the recovery plan (Service 2007, pp. 18–45) found that disease (chytridiomycosis) and predation by nonnative species (bullfrogs, crayfish, fish, and tiger salamanders) are the most important threats to the Chiricahua leopard frog.

Disease

In some areas, Chiricahua leopard frog populations are known to be seriously affected by chytridiomycosis. Chytridiomycosis is an introduced fungal skin disease caused by the organism *Batrachochytrium dendrobatidis* or "*Bd*." Voyles *et al.* (2009) hypothesized that *Bd* disrupts normal regulatory functioning of frog skin, and evidence suggests that electrolyte depletion and osmotic imbalance that occur in amphibians with severe chytridiomycosis are sufficient to cause mortality. This disease has been associated with numerous population extirpations, particularly in New Mexico, and with major die-offs in other populations of Chiricahua leopard frogs (Service 2007).

Predation

Prior to the invasion of perennial waters by predatory, nonnative species (American bullfrog, crayfish, fish species), the frog was historically found in a variety of aquatic habitat types. Today, leopard frogs in the southwestern United States are so strongly impacted by harmful nonnative species, which are most prevalent in perennial waters, that the leopard frogs' occupied niche is increasingly restricted to the uncommon environments that do not contain these nonnative predators, and these environments now tend to be ephemeral and unpredictable. Witte *et al.* (2008, p. 378) found that sites with disappearances of Chiricahua leopard frogs were 2.6 times more likely to have introduced crayfish than were control sites. Unfortunately, few sites with bullfrogs were included in the Witte *et al.* (2008, pp. 375–383) study, and at many sites, there was no identification of the species of fish present.

Summary of Factor C

Overall, the Chiricahua leopard frog has made modest population gains in Arizona in spite of disease and predation, but is apparently declining in New Mexico because of these threats. We consider disease, specifically chytridiomycosis, and predation by nonnative species to be threats affecting the species such that the species is likely to become endangered within the foreseeable future.

D. Inadequacy of Existing Regulatory Mechanisms

The Chiricahua leopard frog is currently listed as a threatened species (67 FR 40790; June 13, 2002) with a special rule (*see* 50 CFR 17.43(b)) to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of

the Act. Even with regulatory protections of the Act currently in place, nonnative species used for fishing baits in Chiricahua leopard frog habitats pose a significant threat to the Chiricahua leopard frog; use of these nonnative species as fishing baits presents a vehicle for the distribution of these often predatory or competitive bait species into frog habitat and for the dissemination of deadly diseases to the frog. Picco and Collins (2008, pp. 1585–1587) found waterdogs (tiger salamanders; *Ambystoma tigrinum*) infected with chytridiomycosis in Arizona bait shops, and waterdogs infected with ranavirus in Arizona, New Mexico, and Colorado bait shops. Furthermore, they found that 26 to 67 percent of anglers released tiger salamanders bought as bait into the waters where they fish, and 4 percent of bait shops released tiger salamanders back into the wild after they were housed in shops with infected animals, despite the fact that release of live salamanders is prohibited by Arizona Game and Fish Commission Orders. This study showed the inadequacy of current State regulations in regard to preventing the spread of amphibian diseases via the waterdog bait trade. Even though the Chiricahua leopard frog is currently listed under the Endangered Species Act as a threatened species, additional regulation or increased enforcement of existing regulations or both are needed to stem the spread of amphibian diseases via use of waterdogs for bait. Therefore, we consider the inadequacy of current regulatory mechanisms to prevent the spread of amphibian diseases via the bait trade to be a threat such that the species is likely to become endangered within the foreseeable future.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Small Populations

Among the potential threats in this category discussed in the Chiricahua leopard frog recovery plan (Service 2007, pp. i-M–17) and the final listing rule (67 FR 40790; June 13, 2002), are genetic and stochastic effects that manifest in small populations. Specifically, small populations are vulnerable to extirpation due to random variations in age structure and sex ratios, as well as from disease or other natural events that a larger population is more likely to survive. Inbreeding depression and loss of genetic diversity in small populations can also reduce the fitness of individuals and the ability of a population to adapt to change. The recent genetic study revealed no systemic lack of genetic diversity within the Chiricahua leopard frog as a species (Herrmann *et al.* 2009, pp. 12–17). In fact, populations were quite variable; up to 16 different genetic groupings were found. This does not preclude the possibility that individual populations may suffer from genetic or demographic problems, but the study shows the species retains good genetic variability.

Climate Change

The Chiricahua leopard frog recovery plan (Service 2007, pp. 40–43) describes anticipated effects of climate change on the Chiricahua leopard frog. The plan cited literature indicating that temperatures rose in the 20th century and warming is predicted to continue over the 21st century (Service 2007, pp. 40–43). Climate models are less certain about predicted trends in precipitation, but the southwestern United States is expected to become drier. Since the recovery plan was prepared, the Intergovernmental Panel on Climate Change (IPCC) (2007, pp. 1–8) published a report stating that global warming is occurring and that precipitation patterns are being affected.

According to the IPCC report, global mean precipitation is anticipated to increase, but not uniformly (IPCC 2007, p. 8). In the American Southwest and elsewhere in the middle latitudes, precipitation is expected to decrease. There is also high confidence that many semi-arid areas like the western United States will suffer a decrease in water resources due to climate change, as a result of less annual mean precipitation and reduced length of snow season and snow depth (IPCC 2007, p. 8). Although most climate models predict a drying trend in the 21st century in the southwestern United States, these predictions are less certain than predicted warming trends. The models do not predict summer precipitation well, and typically at least half of precipitation within the range of the Chiricahua leopard frog occurs in the summer months (Brown 1982, pp. 58–62; Guido 2008, p. 5). Furthermore, there have been no trends either in summer rainfall over the last 100 years in Arizona (Guido 2008, pp. 3–5), or since 1955 in annual precipitation in the western United States (van Mantgem *et al.* 2009, p. 523). On the other hand, all severe, multi-year droughts in the southwestern United States and northwestern Mexico have been associated with La Niña events (Seager *et al.* 2007, p. 3), during which sea surface temperatures in the tropical Pacific decline. Climate models predict that drought driven by La Niña events will be deeper and more profound than any during the last several hundred years (Seager *et al.* 2007, p. 3).

Drought has likely contributed to loss of Chiricahua leopard frog populations since the species was originally listed in 2002. Stock tank populations are particularly vulnerable to loss, because they tend to dry out during periods of below normal precipitation. These trends are likely to continue, but the situation is complicated by interactions with other factors. For example, the effects of drought cannot be separated from the effects of introduced aquatic predators, because drought will affect those predators as well as populations of Chiricahua leopard frogs. The interaction between predators and drought resistance of frog habitats is often a delicate balance. Stock tanks are likely an important habitat for Chiricahua leopard frogs in part because these sites dry out periodically, which rids them of most aquatic predators. Leopard frogs can often withstand drying of stock tanks for 30 days or more, whereas fish and bullfrogs may not. However, if stock tanks dry for longer periods of time, neither leopard frogs nor introduced predators may be capable of persisting. Drought will reduce habitats of both leopard frogs and introduced predators, but exactly how that will affect the Chiricahua leopard frog will probably be site-specific. At this time, it is difficult to predict how drought will impact the overall species' status, but Chiricahua leopard frog sites could be buffered from the effects of drought by wells or other anthropogenic water supplies. Even though drought may contribute to loss of site-specific populations, we do not consider it to be a threat to the species at this time or in the foreseeable future.

Additionally, the effects of chytridiomycosis on frogs are related to water temperature. Sites where Chiricahua leopard frogs coexist with the disease are typically at lower elevations and are warmer sites (Service 2007, p. 26). As a result, if temperatures increase as predicted, perhaps more populations will be able to persist with the disease. Thus climate change, particularly in the form of increased water temperatures, does not seem to pose a significant threat to the Chiricahua leopard frog into the foreseeable future.

Summary of Factor E

The Chiricahua leopard frog recovery plan (Service 2007) describes genetic and stochastic effects that manifest in small populations and the anticipated effects of climate change on the Chiricahua leopard frog as potential threats to the species. Herrmann *et al.*'s

recent genetic study (2009, pp. 12–17), however, revealed no systemic lack of genetic diversity within Chiricahua leopard frog populations. Moreover, climate change, particularly in the form of increased water temperatures, does not seem to pose a significant threat to the Chiricahua leopard frog into the foreseeable future. As such, other natural or manmade factors affecting the species' continued existence do not appear to be a threat affecting the Chiricahua leopard frog such that the species is likely to become endangered within the foreseeable future.

Proposed Determination

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Chiricahua leopard frog. In summary, the most significant threats to the Chiricahua leopard frog include the effects of the disease chytridiomycosis, which has been associated with major die-offs in some populations of Chiricahua leopard frogs (Service 2007, pp. B8–B88), and predation by nonnative species (Factor C). Additional factors affecting the species include degradation and loss of habitat as a result of water diversions and groundwater pumping, poor livestock management, altered fire regimes due to fire suppression and livestock grazing, mining, contaminants, development, and other human activities; and inadequate regulatory mechanisms regarding introduction of nonnative bait species (Factors A and D) (67 FR 40800–40806, June 13, 2002; Sredl and Jennings 2005, pp. 546–549; Service 2007, pp. B1–B88).

Evidence indicates that, since the time of listing, the species has probably made modest population gains in Arizona, but is apparently declining in New Mexico. Overall in the United States, the status of the Chiricahua leopard frog is either static or improving. The status and trends for the species are unknown in Mexico. An aggressive recovery program is underway in the United States, and reestablishment of populations, creation of refugial populations, and habitat enhancement and creation have helped stabilize or improve the status of the species in some areas. Although progress has been made to secure some existing populations and establish new populations, the status of the species continues to be affected by threats such that the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Due primarily to ongoing conservation measures and the existence of relatively robust populations and metapopulations, we have determined that the species is not in immediate danger of extinction (*i.e.,* on the brink of extinction). However, because we believe that the present threats are likely to continue in the future (such as chytrid fungus and nonnative predators spreading and increasing in prevalence and range, affecting more populations of the leopard frog, thus increasing the threats in the foreseeable future), we have determined that the Chiricahua leopard frog is likely to become in danger of extinction throughout all or a significant portion of its range in the foreseeable future. Therefore, we determine that the Chiricahua leopard frog meets the definition of a threatened species under the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, and local agencies; private organizations; and individuals. The Act provides for possible cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed wildlife are discussed in Effects of Critical Habitat Designation and are further discussed, in part, below.

Section 7(a) of the Act requires Federal agencies 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 being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, 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 the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the Department of Defense, U.S. Fish and Wildlife Service, U.S. Forest Service, and Bureau of Land Management; issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. The prohibitions, codified at 50 CFR 17.21 for endangered wildlife and 50 CFR 17.31 for threatened wildlife, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import, export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered or threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered species and 50 CFR 17.32 for threatened wildlife. You may obtain permits for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of species proposed for listing. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized collecting, handling, possessing, selling, delivering, carrying, or transporting of the species, including import or export across State lines and

international boundaries, except for properly documented antique specimens of these taxa at least 100 years old, as defined by section 10(h)(1) of the Act.

(2) Introduction of nonnative species that compete with or prey upon the Chiricahua leopard frog, such as the introduction of competing, nonnative crayfish to the States of Arizona or New Mexico.

(3) The unauthorized release of biological control agents that attack any life stage of this species.

(4) Unauthorized modification of the channel or water flow of any stream or water body in which the Chiricahua leopard frog is known to occur.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arizona Ecological Services Field Office (*see* **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, P.O. Box 1306, Albuquerque, NM 87103; telephone: 505–248–6633; facsimile: 505–248–6788.

Critical Habitat

Background

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

(i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (PBFs):

(I) Essential to the conservation of the species and

(II) Which may require special management considerations or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

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

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing activities likely to result in the destruction or adverse modification of critical habitat. Section 7(a)(2) requires consultation on Federal actions that may affect critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private or other non-Federal lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner seeks or requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the Federal action agency's and the applicant's obligation is not to restore or recover the species, but to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, the habitat within the geographical area occupied by the species at the time it was listed must contain the PBFs essential to the conservation of the species, and be included only if those features may require special management considerations or protection. Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the PBFs laid out in the appropriate quantity and spatial arrangement for the conservation of the species). Under the Act and regulations at 50 CFR 424.12, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it was listed only when we determine that those areas are essential for the conservation of the species and that designation limited to those areas occupied at the time of listing would be inadequate to ensure the conservation of the species.

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

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by Federal agencies, States, or local governments; scientific status surveys and studies; biological assessments; or other unpublished materials and expert opinion or personal knowledge.

Habitat is often dynamic, and species may move from one area to another over time. This is particularly true of the Chiricahua leopard frog. Furthermore, we recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species.

Areas that are important to the conservation of the species, but are outside the critical habitat designation, will continue to be subject to conservation actions we implement under section 7(a)(1) of the Act. Areas that support populations are also subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available scientific information at the time of the agency action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or

other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Prudency Determination

Section 4 of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations at 50 CFR 424.12(a)(1) state that the designation of critical habitat is not prudent when one or both of the following situations exist: (1) The species is threatened by taking or other activity and the identification of critical habitat can be expected to increase the degree of threat to the species; or (2) the designation of critical habitat would not be beneficial to the species.

There is no documentation that the Chiricahua leopard frog is significantly threatened by collection. Although human visitation to Chiricahua leopard frog habitat carries with it the possibility of introducing infectious disease and potentially increasing other threats where the frogs occur, the locations of important recovery areas are already accessible to the public through Web sites, reports, online databases, and other easily accessible venues. Therefore, identifying and mapping critical habitat is unlikely to increase threats to the species or its habitat. In the absence of finding that the designation of critical habitat would increase threats to a species, if there are any benefits to a critical habitat designation, then a prudent finding is warranted. The potential benefits of critical habitat to the Chiricahua leopard frog include: (1) Triggering consultation under section 7 of the Act, in new areas for actions in which there may be a Federal nexus where it would not otherwise occur because, for example, it is or has become unoccupied or the occupancy is in question; (2) focusing conservation activities on the most essential features and areas; (3) providing educational benefits to State or county governments or private entities; and (4) preventing people from causing inadvertent harm to the species. Therefore, because we have determined that the designation of critical habitat will not likely increase the degree of threat to the species and may provide some measure of benefit, we find that designation of critical habitat is prudent for the Chiricahua leopard frog.

Proposed Critical Habitat Designation for Chiricahua Leopard Frog

Background

It is our intent to discuss only those topics directly relevant to the designation of critical habitat for the Chiricahua leopard frog in this section of the proposed rule.

Physical and Biological Features

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

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derived the specific PBFs required for the Chiricahua leopard frog from the studies of this species' habitat, ecology, and life history as described below. These needs are identified in the species' recovery plan (Service 2007), particularly in the Habitat Characteristics and Ecosystems section of Part 1: Background (pp. 15–18); in the Recovery Strategy in Part 11: Recovery (pp. 49–51); in Appendix C—Population and Habitat Viability Analysis (pp. C8–C35); and in Appendix D—Guidelines for Establishing and Augmenting Chiricahua Leopard Frog Populations, and for Refugia and Holding Facilities (pp. D2–D5). Additional insight is provided by Degenhardt *et al.* (1996, pp. 85–87), Sredl and Jennings (2005, pp. 546–549), and Witte *et al.* (2008, pp. 5–8).

Space for Individual and Population Growth and for Normal Behavior

Generally, Chiricahua leopard frogs need aquatic breeding and overwintering sites, both in the context of metapopulations and as isolated populations. For this species, a metapopulation should consist of at least four local populations that exhibit regular recruitment, three of which are continually in existence. Local populations should be arranged in geographical space in such a way that no local population will be greater than 5.0 mi (8.0 km) from at least one other local population during some part of the year unless facilitated dispersal is planned (Service 2007, p. K–3). Movement of frogs among local populations is reasonably certain to occur if those populations are separated by no more than 1.0 mi (1.6 km) overland, 3.0 mi (4.8 km) along ephemeral or intermittent drainages, 5.0 mi (8.0 km) along perennial water courses, or some combination thereof not to exceed 5.0 mi (8.0 km) (the "1–3–5 rule" of dispersal, *see* "*Dispersal*" in the Background section above). Metapopulations should include at least one large, healthy subpopulation (*e.g.,* at least 100 adults) in order to achieve an acceptable level of viability as a larger unit. If aquatic habitats can be managed for persistence through drought periods (*e.g.,* supplying water via a pipeline or a well, lining a pond), overall metapopulation viability may be achievable with a smaller number of individuals per subpopulation (e.g., 40 to 50 adults) (Service 2007, p. K–3).

Isolated breeding populations are also essential for the conservation of the frog because they buffer against disease and disease organisms that can spread rapidly through a metapopulation as infected individuals move among aquatic sites. An isolated, but robust, breeding population should be beyond the reasonable dispersal distance (*see* "*Dispersal*" in the Background section) from other Chiricahua leopard frog populations, contain at least 60 adults, and exhibit a diverse age class distribution that is relatively stable over time. A population of 40 to 50 adults can also be robust or strong if it resides in a drought-resistant habitat (Service 2007, p. K–5). At least two metapopulations and one isolated robust population are needed in each recovery unit to meet the recovery criteria in the recovery plan (Service 2007, p. 53).

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

Chiricahua leopard frogs are fairly tolerant of variations in water quality, but likely do not persist in waters severely polluted with cattle feces (Service 2007, p. 34) or runoff from mine tailings or leach ponds (Rathbun 1969, pp. 1–3; U.S. Bureau of Land Management 1998, p. 26; Service 2007, p. 36). Furthermore, variation in pH, ultraviolet radiation, and temperature, as well as predation stress, can alter the

potency of chemical effects (Akins and Wofford 1999, p. 107; Monson *et al.* 1999, pp. 309–311; Reylea 2004a, pp. 1081–1084). Chemicals may also serve as a stressor that makes frogs more susceptible to disease, such as chytridiomycosis (Parris and Baud 2004, p. 344). The effects of pesticides and other chemicals on amphibians can be complex because of indirect effects on the amphibian environment, direct lethal and sublethal effects on individuals, and interactions between contaminants and other factors associated with amphibian decline (Sparling 2003, pp. 1101–1120; Reylea 2008, pp. 367–374).

Cover or Shelter

Chiricahua leopard frogs are most often encountered in or very near water, generally at breeding locations. Only rarely are they found very far from water. That said, they can be found basking or foraging in riparian vegetation and on open banklines out to the edge of riparian vegetation. These upland areas provide essential foraging and basking sites. A combination of open ground and vegetation cover is desirable for basking and foraging, respectively. Vegetation in these areas provide habitat for prey species and protection from terrestrial predators (those living on dry land). In particular, Chiricahua leopard frogs use these upland areas during the summer rainy season.

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

Aquatic breeding habitat is essential for providing space, food, and cover necessary to sustain all life stages of Chiricahua leopard frogs. Suitable breeding habitat consists of permanent or nearly permanent aquatic habitats from about 3,200 to 8,900 ft (975 to 2,715 m) elevation with deep (greater than 20 in (0.5 m)) pools in which nonnative predators are absent or occur at such low densities and in complex habitats to allow persistence of Chiricahua leopard frogs (Service 2007, pp. 15–18, D–3). Included are cienegas or springs, pools, livestock tanks, lakes, reservoirs, streams, and rivers. Sites as small as 6.0-ft (1.8-m) diameter steel troughs can serve as important breeding sites, particularly if that population is part of a metapopulation that can be recolonized from adjacent sites if extirpation occurs. Some of the most robust extant breeding populations are in earthen livestock watering tanks. Absence of the disease chytridiomycosis is crucial for population persistence in some regions, particularly in west-central New Mexico and at some other locales, as well. However, some populations persist with the disease (*e.g.,* sites between Interstate 19 and the Baboquivari Mountains, Arizona) with few noticeable effects on demographics or survivorship. Persistence with disease is enhanced in warm springs and at lower elevations with warmer water (Service 2007, pp. 22–27, B67).

To be considered essential breeding habitat, water must be permanent enough to support breeding, tadpole development to metamorphosis (change into a frog), and survival of frogs. Tadpole development lasts 3 to 9 months, and some tadpoles overwinter (Sredl and Jennings 2005, p. 547). Juvenile and adult frogs need moisture for survival, including sites for hibernation. Overwintering sites of Chiricahua leopard frogs have not been investigated; however, hibernacula (shelter occupied during winter by inactive animals) of related species include sites at the bottom of well-oxygenated ponds, burial in mud, or moist caves (Service 2007, p. 17). Given these requirements, sites that dry out for 1 month or more will not provide essential breeding or overwintering habitat. However, occasional drying for short periods (less than 1 month) may be beneficial in that the frogs can survive, but nonnative predators, particularly fish, and in some cases, American bullfrogs and populations of aquatic forms of tiger salamanders, will be eliminated during the dry period (Service 2007, p. D3). Water quality requirements at breeding sites included having a pH equal to or greater than 5.6 (Watkins-Colwell and Watkins-Colwell 1998, p. 64), salinities less than 5 parts per thousand (Ruibal 1959, pp. 318–319), and very little chemical pollutants, including but not limited to heavy metals, pesticides, mine runoff, and fire retardants, where the pollutants do not exceed the tolerance of Chiricahua leopard frogs (Rathbun 1969, pp. 1–3; U.S. Bureau of Land Management 1998, p. 26; Boone and Bridges 2003, pp. 152–167; Calfee and Little 2003, pp. 1527–1531; Sparling 2003, pp. 1109–1111; Relyea 2004b, pp. 1741–1746; Service 2007, p. 36; Little and Calfee 2008, pp. 6–10). White (2004, pp. 53–54, 73–79, 136–140) provides specific pesticide use guidelines for minimizing impacts to the Chiricahua leopard frog.

Essential aquatic breeding sites require some open water. Chiricahua leopard frogs can be eliminated from sites that become entirely overgrown with cattails (*Typha* sp.) or other emergent plants. At the same time, frogs need some emergent or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof as refugia from predators and extreme climatic conditions (Sredl and Jennings 2005, p. 547). In essential breeding habitat, if nonnative crayfish, predatory fishes, bullfrogs, or barred tiger salamanders are present, they occur only as rare dispersing individuals that do not breed, or are at low enough densities in habitats that are complex and with abundant escape cover (*e.g.,* aquatic and emergent vegetation cover, diversity of moving and stationary water) that persistence of both Chiricahua leopard frogs and nonnative species can occur (Sredl and Howland 1995, pp. 383–384; Service 2007, pp. 20–22, D3; Witte *et al.* 2008, pp. 7–8).

Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

In some areas, Chiricahua leopard frog populations are known to be seriously affected by the fungal skin disease chytridiomycosis. This disease has been associated with numerous population extirpations, particularly in recovery unit 6 in New Mexico (Service 2007, pp. 5–6, 24–27). The frog appears to be less susceptible to mortality from the disease in warmer waters and at lower elevations. The precise temperature at which frogs can coexist with the disease is unknown and may depend on a variety of factors; however, at Cuchillo Negro Warm Springs, Sierra County, New Mexico, Chiricahua and plains leopard frogs (*Lithobates blairi*) become uncommon to nonexistent where winter water temperatures drop below about 20 degrees Celsius (°C) (68 degrees Fahrenheit (°F)) (Christman 2006a, p. 8). A pH of greater than 8 during at least part of the year may also limit the ability of the disease to be an effective pathogen (Service 2007, pp. 26–27). Furthermore, based on experience in Arizona, particularly the Huachuca Mountains, if Chiricahua leopard frogs are absent for a period of months or years, the disease organism may drop out of the system or become scarce enough that frogs can persist again if reestablished. Essential breeding habitats either lack chytridiomycosis or include conditions that allow for persistence of Chiricahua leopard frogs with the disease, as in warmer waters or at lower elevations.

Dispersal Habitat

Dispersal habitat provides routes for connectivity and gene flow among local populations within a metapopulation, which enhances the likelihood of metapopulation persistence and allows for recolonization of sites that are lost due to drought, disease, or other factors

(Hanski and Gilpin 1991, pp. 4–6; Service 2007, p. 50). Detailed studies of dispersal and metapopulation dynamics of Chiricahua leopard frogs have not been conducted; however, Jennings and Scott (1991, pp. 1–43) noted that maintenance of corridors used by dispersing juveniles and adults that connect separate populations may be critical to conserving populations of frogs. As a group, leopard frogs are surprisingly good at dispersal. In Michigan, young northern leopard frogs (*Lithobates pipiens*) commonly move up to 0.5 mi (0.8 km) from their birthplace, and three young males established residency up to 3.2 mi (5.2 km) away from where they were born (Dole 1971, p. 221). Movement may occur via dispersal of frogs or passive transport of tadpoles along stream courses. The maximum distance moved by a radio-telemetered Chiricahua leopard frog in New Mexico was 2.2 mi (3.5 km) in one direction along a drainage (Service 2007, p. 18). In 1974, Frost and Bagnara (1977, p. 449) noted passive or active movement of Chiricahua and plains leopard frogs for 5 mi (8 km) or more along East Turkey Creek in the Chiricahua Mountains, Arizona. In August 1996, Rosen and Schwalbe (1998, p. 188) found up to 25 young adult and subadult Chiricahua leopard frogs at a roadside puddle in the San Bernardino Valley, Arizona. They believed that the only possible origin of these frogs was a stock tank located 3.5 mi (5.5 km) away. In September 2009, 15 to 20 Chiricahua leopard frogs were found at Peña Blanca Lake west of Nogales. The nearest likely source population was Summit Reservoir, a straight line distance of 3.1 mi (4.9 km) overland or approximately 4.4 mi (7.0 km) along intermittent drainages (Service 2010b, pp. 7–8).

Movements away from water do not appear to be random. Streams are important dispersal corridors for young northern leopard frogs (Seburn *et al.* 1997, pp. 68–70). Displaced northern leopard frogs will return to their place of origin, and may use olfactory, visual, or auditory cues, and possibly celestial orientation, as guides (Dole 1968, pp. 395–398; 1972, pp. 275–276; Sinsch 1991, pp. 542–544). Based on this and other information (Service 2007, pp. 12–14) and as noted in the Background section above, Chiricahua leopard frogs are reasonably likely to disperse 1.0 mi (1.6 km) overland, 3.0 mi (4.8 km) along ephemeral or intermittent drainages, 5.0 mi (8.0 km) along perennial (continuous) water courses, or some combination thereof not to exceed 5.0 mi (8.0 km). Dispersal habitat must provide corridors through which leopard frogs can move among aquatic breeding sites in metapopulations. These dispersal habitats will often be drainages connecting aquatic breeding sites, and may include ephemeral, intermittent, and perennial waters that are not suitable for breeding. The most likely dispersal routes may include combinations of ephemeral, intermittent, and perennial drainages, as well as uplands. Some vegetation cover for protection from predators, and aquatic sites that can serve as buffers against desiccation (drying) and stop-overs for foraging (feeding) are desirable along dispersal routes. A lack of barriers that would block dispersal is critical. Features on the landscape likely to serve as partial or complete barriers to dispersal, include cliff faces and urban areas (Service 2007, p. D–3), reservoirs 20 acres (ac) (50 hectares (ha)) or more in size that are stocked with sportfishes or other nonnative predators, highways, major dams, walls, or other structures that physically block movement (Andrews *et al.* 2008, pp. 124–132; Eigenbrod *et al.* 2009, pp. 32–40; 75 FR 12818, March 17, 2010). The effects of highways on frog dispersal can be mitigated with frog fencing and culverts (Service 2007, pp. I7–I8). Unlike some other species of leopard frogs, Chiricahua leopard frogs have only rarely been found in association with agricultural fields; hence, agriculture may also serve as a barrier to movement.

Primary Constituent Elements for the Chiricahua Leopard Frog

Under the Act and its implementing regulations, we are required to identify the physical and biological features essential to the conservation of the Chiricahua leopard frog in areas occupied at the time of listing, focusing on the features' primary constituent elements (PCEs). We consider primary constituent elements to be the elements of physical and biological features that, when laid out in the appropriate quantity and spatial arrangement to provide for a species' life-history processes, are essential to the conservation of the species.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, we have determined that the PCEs essential to the conservation of the Chiricahua leopard frog are:

(1) Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:

(a) Perennial (water present during all seasons of the year) or nearly perennial pools or ponds at least 6.0 ft (1.8 m) in diameter and 20 in (0.5 m) in depth;

(b) Wet in most years, and do not or only very rarely dry for more than a month;

(c) pH greater than or equal to 5.6;

(d) Salinity less than 5 parts per thousand;

(e) Pollutants absent or minimally present at low enough levels that they are barely detectable;

(f) Emergent and or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof; but emergent vegetation does not completely cover the surface of water bodies;

(g) Nonnative crayfish, predatory fishes, bullfrogs, barred tiger salamanders, and other introduced predators absent or occurring at levels that do not preclude presence of the Chiricahua leopard frog;

(h) Absence of chytridiomycosis, or if chytridiomycosis is present, then conditions that allow persistence of Chiricahua leopard frogs with the disease (*e.g.,* water temperatures that do not drop below 20 °C (68 °F), pH of greater than 8 during at least part of the year); and

(i) Uplands immediately adjacent to breeding sites that Chiricahua leopard frogs use for foraging and basking.

(2) Dispersal habitat, consisting of ephemeral (water present for only a short time), intermittent, or perennial drainages that are generally not suitable for breeding, and associated uplands that provide overland movement corridors for frogs among breeding sites in a metapopulation with the following characteristics:

(a) Are not more than 1.0 mi (1.6 km) overland, 3.0 mi (4.8 km) along ephemeral or intermittent drainages, 5.0 mi (8.0 km) along perennial drainages, or some combination thereof not to exceed 5.0 mi (8.0 km);

(b) Provide some vegetation cover for protection from predators, and in drainages, some ephemeral, intermittent, or perennial aquatic sites; and

(c) Are free of barriers that block movement by Chiricahua leopard frogs, including urban, industrial, or agricultural development; reservoirs that are 50 ac (20 ha) or more in size and stocked with predatory fishes, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that physically block movement.

With this proposed designation of critical habitat, we intend to conserve the PCEs essential to the conservation of the species through the identification of the appropriate quantity and spatial

arrangement of the PCEs sufficient to support the life-history functions of the species. Because not all life-history functions require both PCEs 1 and 2, not all areas proposed as critical habitat will contain both PCEs. Each of the areas proposed in this rule has been determined to contain sufficient PCEs, or, with reasonable effort, PCEs can be restored, to provide for one or more of the life-history functions of the Chiricahua leopard frog.

Under our regulations, we are required to identify the PCEs within the geographical area occupied by the Chiricahua leopard frog at the time of listing that are essential to the conservation of the species and which may require special management considerations or protections. The PCEs are laid out in a specific spatial arrangement and quantity determined to be essential to the conservation of the species. All proposed critical habitat units are within the species' historical geographical range in the United States and contain sufficient PCEs to support at least one life-history function. In addition, all but two proposed critical habitat units, units 13 and 17, are currently occupied by Chiricahua leopard frogs. Units 13 and 17 were occupied at the time of listing and currently contain sufficient PCEs to support life-history functions essential for the conservation of the species. These units are needed as future sites for frog colonization or reestablishment and could be restored (*e.g.,* control of nonnative predators) to allow Chiricahua leopard frog persistence with a reasonable level of effort.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and that may require special management considerations or protection.

All areas proposed for designation as critical habitat will require some level of management to address the current and future threats to the Chiricahua leopard frog and to maintain or restore the PCEs. Special management in aquatic breeding sites will be needed to ensure that these sites provide water quantity, quality, and permanence or near permanence; cover; and absence of extraordinary predation and disease that can affect population persistence. In dispersal habitat, special management will be needed to ensure frogs can move through those sites with reasonable success. The designation of critical habitat does not imply that lands outside of critical habitat do not play an important role in the conservation of the Chiricahua leopard frog. Federal activities that may affect areas outside of critical habitat, such as construction of water diversions, permitting livestock grazing, sportfish stocking, channelization, levee construction, energy development, fire and fuels management, and road construction, are still subject to review under section 7 of the Act if they may affect the Chiricahua leopard frog because Federal agencies must consider both effects to the frog and effects to critical habitat independently. The prohibitions of section 9 of the Act also continue to apply both inside and outside of designated critical habitat.

A detailed discussion of activities influencing the Chiricahua leopard frog and its habitat can be found in the final listing rule (67 FR 40790; June 13, 2002) and the recovery plan (Service 2007, pp. 18–45). The recovery plan also contains recovery-unit-specific threat assessments (Service 2007, pp. B1–B88). Activities that may warrant special management of the physical and biological features that define essential habitat (appropriate quantity and distribution of PCEs) for the Chiricahua leopard frog include, but are not limited to, introduction of predators, such as bullfrogs, crayfish, sportfishes, and barred tiger salamanders; introduction or spread of chytridiomycosis; recreational activities; livestock grazing; water diversions and development; construction and maintenance of roads and utility corridors; fire suppression, fuels management, and prescribed fire; and various types of development. These activities have the potential to affect critical habitat and PCEs if they are conducted within designated units or upstream and in some cases downstream in the floodplains of those units; however, some of these activities, when conducted appropriately, may be compatible with maintenance of adequate PCEs.

Criteria Used To Identify Critical Habitat

As required by section 4(b) of the Act, we used the best scientific and commercial data available in determining areas within the geographical area occupied at the time of listing that contain the features essential to the conservation of the Chiricahua leopard frog, and areas outside of the geographical area occupied at the time of listing that are essential for the conservation of the species. Areas occupied at the time of listing are identified and described in Rorabaugh (2010, pp. 7–17) and information cited therein for Arizona, and for New Mexico in Jennings (1995, pp. 10–21), Painter (2000, pp. 10–21), and 67 FR 40793 (June 13, 2002). We have also reviewed available information that pertains to the habitat requirements of this species. The following were particularly useful: Degenhardt *et al.* (1996, pp. 85–87), Sredl and Jennings (2005, pp. 546–549), Service (2007, pp. 15–18, 47–48), and Witte *et al.* (2008, pp. 5–8).

Units occupied at the time of listing include the specific sites occupied by Chiricahua leopard frogs in June 2002 that contain sufficient PCEs to support life-history functions essential for the conservation of the species. Included are sites where the species was breeding as well as localities where dispersing individuals were present, and other sites for which the breeding status was unknown. If metapopulation structure was known or suspected, dispersal habitats connecting breeding populations within metapopulations are also proposed.

Sites not known to be occupied at the time of listing in June 2002 are also proposed as critical habitat if they are essential to the conservation of the species. Specifically, we assessed whether they are needed to meet the following recovery criterion from the recovery plan: At least two metapopulations located in different drainages (defined here as USGS 10-digit Hydrologic Units) plus at least one isolated and robust population occur in each recovery unit and exhibit long-term persistence and stability (even though local populations may go extinct in metapopulations, Service 2007, p. 53). If sites are needed to meet that criterion, they are proposed for critical habitat herein. At the time of listing, 3 of the units being proposed for critical habitat were unoccupied, and for 10 additional units, their occupancy status was unknown (*see* Table 1). However, all 13 of these units are currently occupied and possess one or both PCEs, or have the ability to develop the PCEs with a reasonable level of restoration work. These units, which were unoccupied or not known to be occupied at the time of listing, are being proposed as critical habitat because they currently contain known breeding populations of Chiricahua leopard frogs, which are relatively scarce (33 populations in Arizona and 20 to 23 in New Mexico), are all considered essential to the conservation of the species, and help meet the population goals in the recovery criterion discussed above.

TABLE 1—OCCUPANCY OF CHIRICAHUA LEOPARD FROG BY PROPOSED CRITICAL HABITAT UNITS

Critical habitat unit	Occupied at time of listing?	Currently occupied?
Recovery Unit 1 (Tumacacori-Atascosa-Pajarito Mountains, Arizona and Mexico)		
(1) Twin Tanks and Ox Frame Tank	Unknown	Yes.
(2) Garcia Tank	Yes	Yes.
(3) Buenos Aires NWR Central Tanks	Yes	Yes.
(4) Bonita, Upper Turner, and Mojonera Tanks	Yes	Yes.
(5) Sycamore Canyon	Yes	Yes.
(6) Peña Blanca Lake and Spring and Associated Tanks	Yes	Yes.
Recovery Unit 2 (Santa Rita-Huachuca-Ajos Bavispe, Arizona and Mexico)		
(7) Florida Canyon	Unknown	Yes.
(8) Eastern Slope of the Santa Rita Mountains	Unknown	Yes.
(9) Las Cienegas National Conservation Area	Yes	Yes.
(10) Pasture 9 Tank	No	Yes.
(11) Scotia Canyon	No	Yes.
(12) Beatty's Guest Ranch	Yes	Yes.
(13) Carr Barn Pond	Yes	No.
(14) Ramsey and Brown Canyons	No	Yes.
Recovery Unit 3 (Chiricahua Mountains-Malpai Borderlands-Sierra Madre, Arizona, New Mexico, and Mexico)		
(15) High Lonesome Well	Yes	Yes.
(16) Peloncillo Mountains	Yes	Yes.
(17) Cave Creek	Yes	No.
(18) Leslie Creek	Yes	Yes.
(19) Rosewood and North Tanks	Yes	Yes.
Recovery Unit 4 (Piñaleno-Galiuro-Dragoon Mountains, Arizona)		
(20) Deer Creek	Yes	Yes.
(21) Oak Spring and Oak Creek	Unknown	Yes.
(22) Dragoon Mountains	Yes	Yes.
Recovery Unit 5 (Mogollon Rim-Verde River, Arizona)		
(23) Buckskin Hills	Yes	Yes.
(24) Crouch, Gentry, and Cherry Creeks, and Parallel Canyon	Yes	Yes.
(25) Ellison and Lewis Creeks	Unknown	Yes.
Recovery Unit 6 (White Mountains-Upper Gila, Arizona and New Mexico)		
(26) Concho Bill and Deer Creek	Unknown	Yes.
(27) Campbell Blue and Coleman Creeks	Yes	Yes.
(28) Tularosa River	Yes	Yes.
(29) Deep Creek Divide Area	Yes	Yes.
(30) Main Diamond Creek	Yes	Yes.
(31) Beaver Creek	Unknown	Yes.
Recovery Unit 7 (Upper Gila-Blue River, Arizona and New Mexico)		
(32) Left Prong of Dix Creek	Unknown	Yes.
(33) Rattlesnake Pasture Tank and Associated Tanks	Unknown	Yes.
(34) Coal Creek	Unknown	Yes.
(35) Blue Creek	Yes	Yes.
Recovery Unit 8 (Black-Mimbres-Rio Grande, New Mexico)		
(36) Seco Creek	Yes	Yes.
(37) Alamosa Warm Springs	Yes	Yes.
(38) Cuchillo Negro Warm Springs and Creek	Yes	Yes
(39) Ash and Bolton Springs	Yes	Yes
(40) Mimbres River	Yes	Yes.

Recovery planning is focused on these existing breeding populations and building on them with habitat rehabilitation and population reestablishments to construct metapopulations and isolated robust populations needed to meet the recovery criterion. Such work is underway in all recovery units, but is further along in some than others. In particular, recovery units 1 (Tumacacori-Atascosa-Pajarito Mountains, Arizona and Sonora), 2 (Santa Rita-Huachuca-Ajos Bavispe, Arizona and Sonora), 3 (Chiricahua Mountains-Malpai Borderlands-Sierra Madre), 4 (Pinaleño-Galiuro-Dragoon Mountains, Arizona), 5 (Mogollon

Rim—Verde River, Arizona), and 8 (Black-Mimbres-Rio Grande, New Mexico) are moving towards meeting the above-cited recovery criterion, and metapopulations and isolated, robust populations have been or are being identified (Rorabaugh 2010, pp. 17–30; Service 2010a, pp. 2–7; 2010b, pp. 2–9). In these recovery units, unoccupied sites have sometimes been identified by the Service, in cooperation with the recovery team steering committees and local recovery groups, where population reestablishment is needed to complete a metapopulation or to establish an isolated, robust population (Rorabaugh 2010, pp. 17–30; Service 2010a, pp. 2–7; 2010b, pp. 2–9). These unoccupied sites are proposed as critical habitat herein.

Identification of such recovery sites in recovery units 6 (White Mountains-Upper Gila, Arizona and New Mexico) and 7 (Upper Gila-Blue River, Arizona and New Mexico) is more difficult, because less work or progress in recovery has been made in these areas. The recovery plan identifies management areas, which are areas within recovery units with the greatest potential for successful recovery actions and threat alleviation (Service 2007, p. 49). Within recovery units 6 and 7, critical habitat has been proposed at specific sites within management areas with the greatest potential for building metapopulations and isolated robust populations. As in other recovery units, existing breeding populations were used either as subpopulations in metapopulations or as isolated, robust populations. Metapopulations were constructed with these existing breeding populations, sites occupied at the time of listing that still retain PCEs sufficient to support life-history functions essential for the conservation of the species, and unoccupied sites with one or more PCEs or the potential to support PCEs with a reasonable level of restoration work. In metapopulations, all of these sites are within reasonable dispersal distance (the "1–3–5 rule" described above) of each other. In recovery unit 7, enough sites could not be found that meet the definition of critical habitat to construct two metapopulations and one isolated, robust population. Similarly, in recovery unit 6, one metapopulation exists, plus several isolated populations, but we have not been able to find aquatic sites that meet the definition of critical habitat to build a second metapopulation. In particular, other aquatic sites, some of which were occupied at the time of listing, lack the PCEs sufficient to support life-history functions essential for the conservation of the species, primarily due to presence of chytridiomycosis, which is a very serious threat in recovery unit 6. This recovery unit will require further investigation, and habitat restoration or creation may be needed to provide additional habitat for breeding Chiricahua leopard frog populations that can contribute to meeting the population goals in the recovery criterion discussed above.

Also included in this critical habitat proposal are dispersal corridors among subpopulations within a metapopulation. These corridors were selected as the most likely routes for dispersal of frogs among sites, based on reasonable dispersal distances along perennial and ephemeral or intermittent drainages, or via overland routes where PCE 2 is present. Our selection of routes assumes perennial drainages are better dispersal corridors than ephemeral or intermittent drainages, and the ephemeral or intermittent drainages are better dispersal corridors than overland routes. We also assume that, if all else is equal, the shorter the route the more likely Chiricahua leopard frogs will successfully disperse along it. In addition, we considered the presence of waterfalls, steep slopes, and other obstacles that may be difficult for a frog to negotiate.

When determining proposed critical habitat boundaries within this proposed rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack PCEs for the Chiricahua leopard frog. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this proposed rule have been excluded by text in the proposed rule and are not proposed for designation as critical habitat. Therefore, if the critical habitat is finalized as proposed, a Federal action involving these lands would not trigger section 7 consultation with respect to critical habitat and adverse modification would not be prohibited under 7(a)(2) unless the specific action would affect the PCEs in the adjacent critical habitat.

We are proposing for designation of critical habitat lands that we have determined are occupied at the time of listing and contain sufficient PCEs to support life-history functions essential for the conservation of the species and lands outside of the geographical area occupied at the time of listing that we have determined are essential for the conservation of the species.

Critical habitat units are proposed for designation based on sufficient PCEs being present to support the Chiricahua leopard frog's life processes. Some units contain both PCEs 1 and 2 and support multiple life processes. Some units contain one of the PCEs or only the potential to develop PCEs necessary to support the Chiricahua leopard frog's particular use of that habitat. In most cases, aquatic sites within metapopulations contain both PCEs 1 and 2. Isolated aquatic sites contain only PCE 1, and dispersal corridors only contain PCE 2, or a reasonable potential to develop those PCEs.

Proposed Critical Habitat Designation

We are proposing 40 units as critical habitat for the Chiricahua leopard frog. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the species. All 40 units we are proposing as critical habitat are within the species' geographical range, including areas occupied at the time of listing and areas not known to be occupied at the time of listing but identified as essential for the conservation of the species (Platz and Mecham 1984, p. 347.1). Table 1 below shows the specific occupancy status of each unit at the time of listing and currently (based on the most recent data available) (Rorabaugh 2010, pp. 7–30; Service files). The approximate area of each proposed critical habitat unit is shown in Table 2. The 40 areas we propose as critical habitat are grouped herein by recovery unit.

TABLE 2—PROPOSED CRITICAL HABITAT UNITS FOR THE CHIRICAHUA LEOPARD FROG

[Area estimates reflect all land within critical habitat unit boundaries. Note that grazing allotments are not considered in private ownership.]

Critical habitat unit	Land ownership by type acres (hectares)			Size of unit in acres (hectares)
	Federal	State	Private	
(1) Twin Tanks and Ox Frame Tank	0	1.3 (0.5)	0.4 (0.2)	1.7 (0.7)
(2) Garcia Tank	0.7 (0.3)	0	0	0.7 (0.3)
(3) Buenos Aires NWR Central Tanks	1,720 (696)	0	0	1,720 (696)
(4) Bonita, Upper Turner, and Mojonera Tanks	201 (81)	0	0	201 (81)
(5) Sycamore Canyon	262 (106)	0	7 (3)	268 (108)
(6) Peña Blanca Lake and Spring and Associated Tanks	202 (82)	0	0	202 (82)
(7) Florida Canyon	4 (2)	0	0	4 (2)
(8) Eastern Slope of the Santa Rita Mountains	172 (70)	0	14 (6)	186 (75)
(9) Las Cienegas National Conservation Area	1,235 (500)	186 (75)	0	1,420 (575)
(10) Pasture 9 Tank	0	0	0.5 (0.2)	0.5 (0.2)
(11) Scotia Canyon	70 (29)	0	0	70 (29)
(12) Beatty's Guest Ranch	0	0	10 (4)	10 (4)
(13) Carr Barn Pond	0.6 (0.3)	0	0	0.6 (0.3)
(14) Ramsey and Brown Canyons	58 (24)	0	65 (26)	123 (50)
(15) High Lonesome Well	0	0	0.4 (0.2)	0.4 (0.2)
(16) Peloncillo Mountains	366 (148)	0	289 (117)	655 (265)
(17) Cave Creek	234 (95)	0	92 (37)	326 (132)
(18) Leslie Creek	26 (11)	0	0	26 (11)
(19) Rosewood and North Tanks	0	78 (31)	19 (8)	97 (39)
(20) Deer Creek	17 (7)	69 (28)	34 (14)	120 (48)
(21) Oak Spring and Oak Creek	27 (11)	0	0	27 (11)
(22) Dragoon Mountains	74 (30)	0	0	74 (30)
(23) Buckskin Hills	232 (94)	0	0	232 (94)
(24) Crouch, Gentry, and Cherry Creeks, and Parallel Canyon	334 (135)	64 (26)	6 (3)	404 (163)
(25) Ellison and Lewis Creeks	83 (34)	0	15 (6)	99 (40)
(26) Concho Bill and Deer Creek	17 (7)	0	0	17 (7)
(27) Campbell Blue and Coleman Creeks	174 (70)	0	0	174 (70)
(28) Tularosa River	335 (135)	0	1,575 (637)	1,910 (772)
(29) Deep Creek Divide Area	408 (165)	0	102 (41)	510 (206)
(30) Main Diamond Creek	14 (6)	0	40 (16)	54 (22)
(31) Beaver Creek	132 (54)	0	25 (10)	157 (64)
(32) Left Prong of Dix Creek	13 (5)	0	0	13 (5)
(33) Rattlesnake Pasture Tank and Associated Tanks	59 (24)	0	0	59 (24)
(34) Coal Creek	7 (3)	0	0	7 (3)
(35) Blue Creek	24 (10)	0	12 (5)	37 (15)
(36) Seco Creek	66 (27)	0	610 (247)	676 (273)
(37) Alamosa Warm Springs	0.2 (0.1)	25 (10)	54 (22)	79 (32)
(38) Cuchillo Negro Warm Springs and Creek	3 (1)	3 (1)	23 (9)	28 (12)
(39) Ash and Bolton Springs	0	0	49 (20)	49 (20)
(40) Mimbres River	0	0	1,097 (444)	1,097 (444)
Total	6,571 (2,661)	426 (173)	4,139 (1,676)	11,136 (4,510)

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the Chiricahua leopard frog, below. Unless indicated otherwise below, the physical and biological features of critical habitat in stream and riverine lotic (actively moving water) systems are contained within the riverine and riparian ecosystems formed by the wetted channel and adjacent floodplains within 328 lateral ft (100 lateral m) on either side of bankfull stage. Bankfull stage is generally considered to be that level of stream discharge reached just before flows spill out onto the adjacent floodplain. The discharges that occur at bankfull stage, in combination with the range of flows that occur over a length of time, govern the shape and size of the river channel (Rosgen 1996, pp. 2–2 to 2–4; Leopold 1997, pp. 62–63, 66). The use of bankfull stage and 328 ft (100 m) on either side recognizes the naturally dynamic nature of riverine systems, recognizes that floodplains are an integral part of the stream ecosystem, and contains the features essential to the conservation of the species.

Ephemeral drainages (containing water for only brief periods) proposed as critical habitat for dispersal corridors among breeding sites in metapopulations will, in some cases, be less distinct than the stream or river reaches where frogs breed. Nonetheless, these ephemeral drainages will still be defined by wetland plant species, denser or taller specimens of upland species, channel characteristics such as sandy or gravelly soils that contrast with upland soils, the presence of cut banks, or some combination of these. Where dispersal corridors cross uplands, proposed critical habitat is 328 ft (100 m) wide, the centerline of which is the line delineated on our critical habitat maps and legal descriptions.

In ponds proposed as critical habitat, most of which are impoundments for watering cattle or other livestock, proposed critical habitat extends for 20 ft (6.1 m) beyond the high water line or to the boundary of the riparian and upland vegetation edge, whichever is greatest. The frogs are commonly found foraging and basking within 20 feet of

the shoreline of tanks. In addition, proposed critical habitat extends upstream from ponds from the extent of the boundary for 328 ft (100 m) from the high water line. The proposed critical habitat extends to 328 ft (100 m) upstream because there is often a riparian drainage coming into the tank, and the frogs are likely moving along those drainages. Also, the high water line is defined as that water level which, if exceeded, results in overflow of the pond. In most cases, this is the elevation of the spillway in livestock impoundments.

Recovery Unit 1 (Tumacacori-Atascosa-Pajarito Mountains, Arizona and Mexico)

Unit 1: Twin Tanks and Ox Frame Tank

Unit 1 consists of 1.3 ac (0.5 ha) of lands owned by the Arizona State Land Department and 0.4 ac (0.2 ha) of private lands in the Sierrita Mountains, Pima County, Arizona. Twin Tanks is on lands owned and managed by the Arizona State Land Department and consists of two tanks in proximity to each other as well as a drainage running between them. Ox Frame Tank is on private lands. This unit is proposed as critical habitat because it is essential for the conservation of the species.

Occupancy of these livestock tanks at the time of listing is unknown, as they were not surveyed for frogs until 2007; however, these sites are important breeding sites for recovery. Twin Tanks held more than 1,000 frogs in 2008, and is a robust breeding population. Ox Frame and Twin tanks are too far apart (4.3 mi (7.0 km) overland) across rugged terrain to expect frogs to move between these sites. Hence, these tanks serve as isolated populations. PCE 1 is present at both sites. The Twin Tanks area is less than 0.5 mi (0.8 km) upslope of active mining at Freeport McMoRan's Sierrita Copper Mine and could be affected by those mining activities. Both sites are also at risk of introduction of nonnative predators, such as bullfrogs and crayfish. Presence of chytridiomycosis at these tanks has not been investigated.

Unit 2: Garcia Tank

Unit 2, consisting of 0.7 ac (0.3 ha), is a former cattle tank located on the Buenos Aires National Wildlife Refuge (NWR), Pima County, Arizona. It is a double tank; the southwest or downstream impoundment is what dependably holds water, but both parts of the tank are proposed as critical habitat. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCE 1) to support life-history functions essential for the conservation of the species.

A breeding site, this unit was known to have been occupied in 2002 and 2006. Leopard frogs were noted in 2010, but they were not identified to species (the lowland leopard frog, *Lithobates yavapaiensis,* is known to occur in the area). It is about 3.6 mi (5.8 km) over land across dissected and hilly terrain to the next nearest population at Lower Carpenter Tank. The nearest known populations to the east are on the Coronado National Forest more than 9.0 mi (14 km) away. Hence, this site is isolated and is managed as an isolated, robust population. The greatest threats needing management are introductions of or colonization by nonnative species, such as bullfrogs and crayfish; and drought that could greatly reduce or eliminate the aquatic habitat.

Unit 3: Buenos Aires NWR Central Tanks

This unit, consisting of 1,720 ac (696 ha) within the Buenos Aires National Wildlife Refuge (NWR), Pima County, Arizona, includes former cattle tanks and other waters used as breeding and dispersal sites plus intervening and connecting drainages and uplands. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Core breeding sites at permanent or nearly permanent tanks (Carpenter, Rock, State, Triangle, and New Round Hill) support the strongest metapopulation known within the range of the species. Chongo Tank, where a population was established in 2009, may become a sixth breeding site. Seven other tanks support frogs periodically to regularly, and breeding and recruitment likely takes place at these tanks in wet cycles. Frogs occupied Carpenter, Rock, and Triangle Tanks in 2002 at or about the time of listing. Tanks proposed for designation include Carpenter, Rock, State, Triangle, New Round Hill, Banado, Choffo, Barrel Cactus, Sufrido, Hito, Morley, McKay, and Chongo Tanks. McKay Tank is actually a cluster of three tanks, all of which are proposed as critical habitat. Also proposed as critical habitat are the intervening drainages, including: (1) Puertocito Wash from Triangle Tank north through and including Aguire Lake to New Round Hill Tank, then upstream to the confluence with Las Moras Wash, and upstream in Las Moras Wash to Chongo Tank; (2) an unnamed drainage from Puertocito Wash upstream to McKay Tank; (3) an unnamed drainage from Puertocito Wash upstream to Rock Tank, including Morley Tank, then upstream in an unnamed drainage to the top of that drainage, directly overland to an unnamed drainage, and then upstream to Hito Tank and downstream to McKay Tank; (4) from Sufrido Tank downstream in an unnamed drainage to its confluence with an unnamed drainage running between Rock and Morley tanks; (5) Lopez Wash from Carpenter Tank downstream to Aguire Lake; (6) an unnamed drainage from its confluence with Lopez Wash upstream to Choffo Tank; (7) an unnamed drainage from its confluence with Lopez Wash upstream to State Tank; (8) an unnamed drainage from Banado Tank downstream to its confluence with an unnamed drainage, then upstream in that drainage to Barrel Cactus Tank; and (9) an unnamed drainage from Banado Tank upstream to a saddle, then directly downslope to Lopez Wash.

In this unit, bullfrogs remain a threat, but efforts are underway to eliminate the last known populations of bullfrogs in the Altar Valley (on the Santa Margarita Ranch to the south of Buenos Aires NWR). Frogs in this area have tested positive for chytridiomycosis, but the disease appears to have little effect on population viability.

Unit 4: Bonita, Upper Turner, and Mojonera Tanks

This unit includes 201 ac (81 ha) of Coronado National Forest lands in the Pajarito and Atascosa Mountains, Santa Cruz County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

Two breeding sites (Bonita Tank and Mojonera Tank), combined with a dispersal site or site where breeding and recruitment may occur in wet years (Upper Turner Tank), form the nucleus for a future metapopulation. Three additional waters—Sierra Tank East, Sierra Tank West, and Sierra Well—may have the potential to support breeding with habitat work. Frogs currently occupy Bonita and Mojonera Tanks, and Bonita was occupied at the time of listing. Frogs were last found at Upper Turner Tank in 2004. The occupancy status of Mojonera and Upper Turner Tanks at the time of listing is unknown. The proposed critical habitat in Unit 4 also includes intervening drainages, uplands, and ephemeral or intermittent waters as follows: (1) From Upper Turner Tank upstream in an unnamed drainage to its confluence with a minor drainage coming in from the east, then directly upslope in that drainage and

east to a saddle, and directly downslope to Bonita Canyon, and upstream in Bonita Canyon to Bonita Tank; and (2) from Mojonera Tank downstream in Mojonera Canyon to a sharp bend where the drainage turns west-northwest, then southeast and upstream in an unnamed drainage to a saddle, downslope through an unnamed drainage to its confluence with another unnamed drainage, upstream in that unnamed drainage to a saddle, and then downstream in an unnamed drainage to Sierra Well, to include Sierra Tank West and Sierra Tank East, then directly overland to Upper Turner Tank.

In this unit, bullfrogs are a continuing threat, and illegal border activity and associated law enforcement have resulted in watershed damage. A road on the berm of Upper Turner Tank is scheduled for improvement to access a surveillance tower operated by U.S. Customs and Border Protection. Frogs in this region have tested positive for chytridiomycosis, but the disease appears to have little effect on population viability.

Unit 5: Sycamore Canyon

This unit includes 262 ac (106 ha) of Coronado National Forest land and 7 ac (3 ha) of private lands along Atascosa Canyon through Bear Valley Ranch in the Pajarito and Atascosa Mountains, Santa Cruz County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Sycamore Canyon is the only significant site with moving water in recovery unit 1 to support breeding Chiricahua leopard frogs. Most other sites are livestock tanks or impounded springs. Sycamore Canyon, Bear Valley Ranch Tank, Rattlesnake Tank, and Atascosa Canyon downstream of Bear Valley Ranch were all occupied by Chiricahua leopard frogs at the time of listing. The occupancy status of the other sites at the time of listing is unknown. Sycamore Canyon, Yank Tank, North Mesa Tank, South Mesa Tank, and Bear Valley Ranch Tank are currently occupied. The current occupancy status of Rattlesnake Tank and Atascosa Canyon downstream of Bear Valley Ranch Tank is unknown. Proposed critical habitat includes approximately 6.35 mi (10.23 km) of Sycamore Canyon from Ruby Road to the international border, which supports frogs and breeding, although in the driest months (May and June) the stream dries to pools and tinajas (a term used in the American Southwest for water pockets formed in bedrock depressions that occur below waterfalls or are carved out by spring flow or seepage).

A number of livestock tanks in the region form a strong metapopulation with Sycamore Canyon. Proposed critical habitat includes the following tanks and their connecting drainages: (1) From Yank Tank downstream in an unnamed drainage to Sycamore Canyon; (2) from North Mesa Tank downstream in Atascosa Canyon to its confluence with Peñasco Canyon, then from that confluence downstream in Peñasco Canyon to Sycamore Canyon; (3) from Horse Pasture Spring downstream to Peñasco Canyon; (4) from Bear Valley Ranch Tank downstream in an unnamed drainage to Atascosa Canyon; (5) from South Mesa Tank downstream in an unnamed drainage to Peñasco Canyon; and (6) from Rattlesnake Tank downstream in an unnamed canyon to its confluence with another unnamed drainage, then upstream in that drainage to South Mesa Tank.

Bullfrogs have been a continuing problem in this unit, although recent control efforts seem to have eliminated them from Sycamore Canyon. Nonnative green sunfish (*Lepomis cyanellus*) have occasionally been found in Sycamore Canyon, as well. Pools critical to survival of frogs and tadpoles through the dry season, are sensitive to sedimentation and erosion upstream in the watershed of Sycamore Canyon. The earliest records of chytridiomycosis in the United States are from Sycamore Canyon (1972). A robust population of Chiricahua leopard frogs persists at this site despite the disease and periodic die-offs. Illegal border activity and associated law enforcement have resulted in many trails and new vehicle routes in the area, as well as trampling in the canyon.

Sycamore Canyon is designated a Research Natural Area by the Coronado National Forest and is closed to livestock grazing. Critical habitat is designated for the Sonora chub (*Gila ditaenia*) in Sycamore Canyon from Hank and Yank Spring (about 0.25 mi (0.40 km) downstream of the Ruby Road crossing) downstream to the international border, and in a 25-ft (7.6-m) strip on both sides of the creek (51 FR 16042; April 30, 1986). Much of this unit also lies within the Pajarita Wilderness area. These designations provide some level of protection to Chiricahua leopard frog habitats in Sycamore Canyon.

Unit 6: Peña Blanca Lake and Spring and Associated Tanks

This unit includes 202 ac (82 ha) and is all on Coronado National Forest lands, Santa Cruz County, Arizona. This area is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

This unit is a metapopulation that includes Peña Blanca Lake, Peña Blanca Spring, Summit Reservoir, Tinker Tank, Thumb Butte Tank, and Coyote Tank. These sites were all occupied in 2009. Chiricahua leopard frogs and tadpoles were found in Peña Blanca Lake in 2009 and 2010, after the lake had been drained and then refilled, which eliminated the nonnative predators. However, early in 2010, rainbow trout (*Oncorhynchus mykiss*) were restocked back into the lake, and plans are underway to reestablish a variety of warm water fishes, as well. Currently, the Service is working with project proponents to help design the sportfish project in a way that will allow persistence of Chiricahua leopard frogs, but whether this site retains the PCEs necessary for breeding will be evaluated in our final critical habitat determination.

In 2002, Chiricahua leopard frogs were only known to occur at Peña Blanca Spring. Occupancy status at the time of listing for the other sites is unknown. Proposed critical habitat also includes: (1) From Summit Reservoir directly southeast to a saddle on Summit Motorway, then downslope to an unnamed drainage and downstream in that drainage to its confluence with Alamo Canyon, then downstream in Alamo Canyon to its confluence with Peña Blanca Canyon, then downstream in Peña Blanca Canyon to Peña Blanca Lake, to include Peña Blanca Spring; (2) from Thumb Butte Tank downstream in an unnamed drainage to its confluence with Alamo Canyon; (3) from Tinker Tank downstream in an unnamed drainage to its confluence with Alamo Canyon, then downstream in Alamo Canyon to the confluence with the drainage from Summit Reservoir; and (4) from Coyote Tank downstream in an unnamed drainage to its confluence with Alamo Canyon, and then downstream in Alamo Canyon to the confluence with the drainage from Tinker Tank, to include Alamo Spring.

Nonnative introduced predators, particularly bullfrogs and sportfish, remain a serious threat in this region. A concerted effort was made in 2008–2010 to clear the area of bullfrogs. The effort appears to be successful, and Chiricahua leopard frogs have benefited. However, there is a continuing threat of reinvasion or introduction of bullfrogs. As discussed, sportfish at Peña Blanca Lake

are an additional threat. Frogs in this region test positive for chytridiomycosis; however, the disease appears to have little effect on population viability.

Recovery Unit 2 (Santa Rita-Huachuca-Ajos Bavispe, Arizona and Mexico)

Unit 7: Florida Canyon

This unit includes 4 ac (2 ha) and is all on Coronado National Forest lands in the Santa Rita Mountains, Pima County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species.

Chiricahua leopard frogs currently occupy this site; however, its occupancy status at the time of listing is unknown. A single frog was found in 2008, which was augmented with frogs from elsewhere in the Santa Rita Mountains in 2009. The site is too far from other known breeding populations to be part of a metapopulation (the next nearest population is about 5 mi (8 km) straight line distance away in Unit 8; hence, it will be managed as an isolated, robust population). PCE 1 is present and will be enhanced in 2010, with the addition of a steel tank for breeding. Included in the proposal is approximately 1,521 ft (463 m) of Florida Canyon from a silted-in dam to the downstream end of the Florida Workstation property.

Water is a limiting factor in this system, particularly during drought. Fire in the watershed could result in scouring and sedimentation in the pools important as habitat for the frog. The addition of a steel tank will provide dependable water for breeding that is safe from erosion or sedimentation events. Chyridiomycosis and introduced predators are potential threats, but neither has been recorded at this site.

Unit 8: Eastern Slope of the Santa Rita Mountains

This unit includes 172 ac (70 ha) of Coronado National Forest lands and 14 ac (6 ha) of private lands in the Greaterville area in Pima County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species.

Included in the proposed critical habitat designation are two metal troughs in Louisiana Gulch, Greaterville Tank, Los Posos Gulch Tank, and Granite Mountain Tank complex. The Granite Mountain Tank complex includes two impoundments and a well. All but Los Posos Gulch Tank are currently occupied breeding sites; however, the occupancy status at the time of listing for these sites is unknown. PCEs 1 and 2 are present. More than 60 frogs were observed at Los Posos Gulch Tank in 2008. It was once thought to be a robust breeding site; however, it dried, and the frogs disappeared in 2009. These four sites collectively form a metapopulation. A number of other sites in this region have been found to support dispersing Chiricahua leopard frogs; however, only a few frogs and no breeding have been observed at these sites, so they are thought to represent dispersing frogs. The occupancy status of these other sites at the time of listing is unknown. Proposed critical habitat also includes intervening drainages as follows: (1) From Los Posos Gulch upstream to a saddle, then downslope in an unnamed drainage to the confluence with another unnamed drainage, then upstream and south in that drainage to a saddle, and downslope through an unnamed drainage to its confluence with Ophir Gulch, then in Ophir Gulch to upper Granite Mountain Tank, to include an ephemeral tank near upper Granite Mountain Tank and a well; (2) from Greaterville Tank downstream in an unnamed drainage to Ophir Gulch; and (3) Louisiana Gulch from the metal tanks upstream to the headwaters of Louisiana Gulch then across a saddle and downslope through an unnamed drainage to its confluence with Ophir Gulch.

Surface water is a primary limiting factor in this unit. The breeding habitat at Louisiana Gulch, although limited to two 6.0-ft (1.8-m) diameter steel tanks, is dependable because it is fed by a well. The other tanks are filled by runoff and susceptible to drying during drought. Nonnative predators and chytridiomycosis are not known to be imminent threats in this area.

Unit 9: Las Cienegas National Conservation Area

This unit is in Pima County, Arizona, and includes 1,235 ac (500 ha) of Bureau of Land Management lands and 186 ac (75 ha) of Arizona State Land Department lands, including an approximate 4.33-mi (6.98-km) reach of Empire Gulch and 1.91 mi (3.08 km) of Cienega Creek, including the Cinco Ponds. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

At the time of listing, Empire Gulch was occupied; however the occupancy status of Cinco Ponds at that time is unknown. Currently, Chiricahua leopard frogs are extant at Empire Gulch and Cinco Ponds. Frogs breed in a reach of Empire Gulch near Empire Ranch. This reach includes: (1) Empire Gulch from a pipeline road crossing above the breeding site downstream to Cienega Creek; and (2) Cienega Creek from the Empire Gulch confluence upstream to the approximate end of the wetted reach and where the creek bends hard to the east, to include Cinco Ponds. An enclosed Chiricahua leopard frog facility exists along Empire Gulch and is used to headstart eggs and tadpoles for release to augment the wild population. Frogs may breed periodically at Cinco Ponds. These sites are too far (more than 8.0 mi (13 km) straight line distance) from the next nearest population, which is in Unit 8; thus the population(s) in Unit 9 currently acts as an isolated population(s).

The recovery program for the Chiricahua leopard frog at Las Cienegas is a collaborative, multi-partner approach that recently got a boost with a substantial grant from the National Fish and Wildlife Foundation. However, bullfrogs are present and represent a persistent problem. Chiricahua leopard frogs suffer from chytridiomycosis in this unit, which has resulted in periodic die-offs; however, the frogs are persisting with the disease. Crayfish occur within a few miles and pose a significant threat if they reach Cienega Creek or Empire Gulch. The frog population in this unit is not robust.

Las Cienegas National Conservation Area is managed under the principles of multiple-use and ecosystem management for future generations. Empire Gulch and Cienega Creek downstream of its confluence with Empire Gulch is designated critical habitat for the endangered Gila chub (*Gila intermedia*) (70 FR 66663; November 2, 2005). The chub and the endangered Gila topminnow (*Poeciliopsis occidentalis*) occur in Cienega Creek adjacent to Empire Gulch. The Gila topminnow also occurs in Empire Gulch. Neither species occurs in Cinco Ponds. Where these species or critical habitat occur, some level of protection may be afforded to Chiricahua leopard frog habitat.

Unit 10: Pasture 9 Tank

This unit includes 0.5 ac (0.2 ha) and is a former cattle pond entirely on private lands of the San Rafael Ranch, San Rafael Valley, Santa Cruz County, Arizona. It is proposed as critical habitat because it is essential for the conservation of the species.

This unit was not known to be occupied at the time of listing; however, Chiricahua leopard frogs were established at this site through a reintroduction in 2009. The next nearest population is about a 10.5-mi (16.8-km), straight-line distance away in the Unit

11; hence, Pasture 9 Tank is being managed as an isolated population. PCE 1 is present in this unit.

The site is fenced with bullfrog exclusion fencing, which also excludes livestock, and the pond is equipped with a solar-powered pump and well that provides a continual source of water for the pond. The design of the fence allows Chiricahua leopard frogs to exit the fenced area, but they cannot return. Proposed critical habitat includes all areas within the fence. This is a cooperative project with the landowner through the Service's Partners for Fish and Wildlife Program. The landowner has also entered into a Safe Harbor Agreement for the Chiricahua leopard frog; however, bullfrogs are in the area and remain a threat if the fence is breached.

Chytridiomycosis is present in endangered Sonoran tiger salamander (*Ambystoma tigrinum stebbinsi*) populations in the San Rafael Valley, and the disease has caused mass die-offs and extirpations of Chiricahua leopard frogs in the nearby Huachuca Mountains; as a result, chytridiomycosis is considered a threat at Pasture 9 Tank. This unit is being considered for exclusion from the final rule for critical habitat under section 4(b)(2) of the Act (*see Application of Section 4(b)(2) of the Act* section below).

Unit 11: Scotia Canyon

This unit includes 70 ac (29 ha) in Scotia Canyon, Huachuca Mountain, Cochise County, Arizona, and is entirely on Coronado National Forest lands. This unit is proposed as critical habitat because it is essential for the conservation of the species.

The unit encompasses an approximate 1.36-mi (2.19-km) reach of the canyon with perennial pools, as well as a perennial travertine (a form of limestone) seep, a spring fed, perennial impoundment (Peterson Ranch Pond), and an ephemeral impoundment adjacent to Peterson Ranch Pond. There is also a perennial or nearly perennial impoundment in the channel downstream of the travertine seep. Breeding habitat occurs at Peterson Ranch Pond and possibly at other perennial or nearly perennial pools.

Chiricahua leopard frogs were reestablished in this canyon via a translocation in 2009; the last record of a Chiricahua leopard frog in the canyon before that was 1986. Scotia Canyon was not occupied at the time of listing. PCEs 1 and 2 are present.

Currently, this site is isolated from other populations, the nearest of which is in Unit 15, about a 4.4-mi (7.0-km), straight-line distance away over mountainous terrain. Hence this site is managed as an isolated population, but there is some potential for creating connectivity to the metapopulation in Unit 14 via population reestablishment in Garden Canyon at Fort Huachuca. Scotia Canyon, with its pond and stream habitats, has the potential to be a robust population.

This canyon, and sites around it, has been the subject of intensive bullfrog eradication and habitat enhancement work in preparation for reestablishing the Chiricahua leopard frog. However, bullfrog reinvasion is a significant, continuing threat, and other nonnative predators could potentially reach Scotia Canyon via natural or human assisted immigration. In addition, tiger salamanders (*Ambystoma mavortium*) from the Peterson Ranch Pond tested positive for chytridiomycosis in 2009; however, in 2010, the frogs appeared to be doing well in that same pond, and it is unclear as to whether tiger salamander have persisted at that pond. Nonetheless, disease has resulted in extirpations elsewhere in the Huachuca Mountains, and is considered a serious threat in Scotia Canyon. Further, heavy fuel loads could result in a catastrophic wildfire, which would have significant detrimental effects on the frog and its aquatic habitats. Finally, a road through the canyon is eroded in places and contributes sediment to the stream; it receives much use by recreationists and U.S. Customs and Border Protection.

The proposed critical habitat designation for the Chiricahua leopard frog largely overlaps that of critical habitat for the endangered plant Huachuca water-umbel (*Lilaeopsis schaffneriana* var. *recurva*). Several listed and candidate species have been recorded in Scotia Canyon. These occurrences of critical habitat and listed species provide some level of protection to Chiricahua leopard frog habitat in this unit.

Unit 12: Beatty's Guest Ranch

This unit includes 10 ac (4.0 ha) of private lands in Miller Canyon on the east slope of the Huachuca Mountains, Cochise County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Beatty's Guest Ranch is one of four proposed critical habitat units (12, 13, 14, and 15) which was considered to be populated by the Ramsey Canyon leopard frog, until the Ramsey Canyon leopard frog was determined to be the same species as the Chiricahua leopard frog in 2008 (Crothers 2008, p. 7). Frogs and habitat in these four units have been managed intensively since 1995. A conservation agreement and very active conservation partnership was formalized in 1997. The conservation agreement implements the Chiricahua leopard frog recovery plan in this portion of the Huachuca Mountains. More recently, landowners in this unit enrolled their lands in the Arizona Game and Fish Department's (AGFD) Safe Harbor Agreement with a Certificate of Inclusion. Currently, The Nature Conservancy is in the process of enrolling their Ramsey Canyon Preserve in Unit 14, as well. Because frogs would not exist on these properties but for reestablishment projects by the Service and AGFD with the permission of the landowners, Beatty's Guest Ranch and The Nature Conservancy's Ramsey Canyon Preserve have been assigned a zero baseline for frogs under the Safe Harbor Agreement.

Frogs were present in Unit 12 at the time of listing and are currently extant. This is a robust breeding population that inhabits a number of constructed ponds on the property. Frogs freely move among the ponds through an apple orchard, connecting streams, and overland. Beatty's Guest Ranch is too far from other populations (about a 3.0-mi (4.8-km), straight-line distance from Unit 14 over rugged terrain, or about 2.0 mi (3.2 km) along ephemeral or intermittent drainages and 1.7 mi (2.7 km) overland to Unit 13) to form a metapopulation, and because of presence of chytridiomycosis and population decline and extirpation associated with the disease in Units 13, 14, and 15, such connection is not desirable. As a result, Unit 12 is managed as an isolated, robust population. This is the most stable and robust population of Chiricahua leopard frogs known in recovery unit 2.

Given the presence of chytridiomycosis in Units 13, 14, and 15 and its apparent dire effects on Chiricahua leopard frog populations there, chytridiomycosis is an ever present threat in Unit 12. However, frogs at the Beatty's Guest Ranch have never tested positive for the disease. Factors may be acting at this site to prevent its establishment as an epizootic disease (an outbreak of disease affecting many animals of one kind at the same time). Because of the diligent management of the Beatty family, no other factors threaten this population. The frogs are present as a result of a translocation agreed to by the Beattys, who are signatories to the conservation agreement described above, and have also enrolled their property into a Safe

Harbor Agreement for the Chiricahua leopard frog. Under section 4(b)(2) of the Act, this unit is being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Unit 13: Carr Barn Pond

This unit includes 0.6 ac (0.3 ha) of Coronado National Forest lands in the Huachuca Mountains, Cochise County, Arizona. Carr Barn Pond is an impoundment with a small, lined pond with water provided from a well. During runoff events, the size of the pond expands considerably and then gradually shrinks back to the lined section.

This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

As with Units 12, 14, and 15, this unit has been the subject of a conservation agreement and much intensive management for the Ramsey Canyon (=Chiricahua) leopard frog. The Coronado National Forest created and now maintains Carr Barn Pond consistent with the Ramsey Canyon (=Chiricahua) leopard frog conservation agreement, to which they are a signatory. This site was occupied at the time of listing and was occupied into 2009, but the population has since been eliminated, probably by chytridiomycosis. This site is too far away (3.4 mi (5.4 km) from Unit 14 and about 3.0 mi (4.8 km) from Unit 12 by way of a straight-line distance over rugged terrain) to be part of a metapopulation; hence, it is currently considered isolated. There is some potential for connecting it to Units 11, 14, and 15 (*see* discussion above), but additional habitat creation or enhancement and population reestablishment would be needed.

The unit has a history of nonnative predator problems and disease. We believe PCE 1 is present, but disease is a serious threat here that may be an impediment to viable frog populations. The population has been eliminated after chytridiomycosis die-offs three times; twice the population has subsequently been reestablished through translocations. Largemouth bass have been introduced illegally into the pond and then removed, and bullfrogs periodically invade the site but are promptly removed before they breed.

Unit 14: Ramsey and Brown Canyons

This unit includes 65 ac (26 ha) of private lands in Ramsey Canyon and 58 ac (24 ha) of Coronado National Forest in Brown and Ramsey Canyons, Huachuca Mountains, Cochise County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

This unit along with other Units (12, 13, and 15) have been managed intensively for Ramsey Canyon (=Chiricahua) leopard frog conservation since 1995. This unit is managed as a metapopulation. Places where frogs have bred and that still retain PCE 1 include Ramsey Canyon, Trout and Meadow Ponds on private lands owned by The Nature Conservancy, and the Ramsey Canyon Box; and in Brown Canyon, the Wild Duck Pond, House Pond, and the Brown Canyon Box (on Coronado National Forest lands). PCEs 1 and 2 are present within this unit.

In addition to the breeding ponds, this critical habitat proposal also includes dispersal sites and corridors for connectivity among breeding ponds as follows: (1) From the top of the Box in Ramsey Canyon downstream to a dirt road crossing of Ramsey Canyon at the mouth of the canyon; (2) Brown Canyon from the Box downstream to the Wild Duck Pond and House Pond on the former Barchas Ranch; and (3) from the dirt road crossing of Ramsey Canyon directly overland to House Pond.

The Ramsey Canyon portion of the unit was not occupied at the time of listing, but Brown Canyon was occupied. Both canyons are considered currently occupied, but although frogs have bred at the Box in Brown Canyon, the site is too small to support more than just a few frogs. In addition, recent die-offs associated with chytridiomycosis have significantly reduced populations in both canyons. The House and Wild Duck ponds as well as Ramsey Canyon have a history of chytridiomycosis outbreaks. The Ramsey Canyon population has been eliminated twice and then reestablished; the Wild Duck and House Ponds have also undergone repeated disease-related declines and extirpations followed by reestablishments. The populations tend to do well for months or years after reestablishment only to experience epizootic (an outbreak of disease affecting many animals of one kind at the same time) chytridiomycosis outbreaks followed by declines or extirpation.

Additional threats in this unit include nonnative species, drying, sedimentation, and fire. Nonnative predators threaten populations at the House and Wild Duck Ponds, where bullfrogs have been found periodically and goldfish were once introduced. Those two ponds are buffered against drought and drying by a pipeline from a spring and a windmill. However, the Box in Brown Canyon is subject to low water and drying during drought. That later population depends upon immigration or active reestablishment for long-term persistence. The Trout and Meadow Ponds in Ramsey Canyon are fed by pipelines; thus the water supply is dependable. The Trout Pond could however be filled in with sediment during a flood. Further, a fire in the watershed could threaten aquatic breeding sites in both canyons.

Lands owned by The Nature Conservancy in Ramsey Canyon are known as the Ramsey Canyon Preserve and are managed for preservation of natural features and species, including the Chiricahua leopard frog. The Nature Conservancy has been an active participant in Chiricahua leopard frog recovery for many years; the Ramsey Canyon Preserve is currently in the process of being signed onto a Safe Harbor Agreement, and The Nature Conservancy signed the Ramsey Canyon leopard frog conservation agreement, which implements the Chiricahua leopard frog recovery plan in the Huachuca Mountains. Under section 4(b)(2) of the Act, the Ramsey Canyon Preserve is being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Recovery Unit 3 (Chiricahua Mountains-Malpai Borderlands-Sierra Madre, Arizona, New Mexico, and Mexico)

Unit 15: High Lonesome Well

This unit includes 0.4 ac (0.2 ha) of privately owned lands in the Playas Valley, Hidalgo County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCE 1) to support life-history functions essential for the conservation of the species.

This unit consists of an elevated concrete tank into which Chiricahua leopard frogs were introduced prior to listing (Painter 2000, p. 15). The tank is supplied with water from a windmill and provides water for livestock. The site supports a robust breeding population, but is much too far from other populations to be part of a metapopulation (the nearest population is in Unit 17, 25.4 mi (40.6 km) to the west). Furthermore, although frogs can exit the tank, they cannot get back into the tank. As a result, it is managed as an isolated, robust population.

Chiricahua leopard frogs were present at the time of listing and are currently extant. The population is threatened by deterioration of the concrete tank, which needs repair or replacement. Catastrophic failure of the tank would result in loss of this population. Chytridiomycosis has not been detected at this site, but disease testing has been minimal. Nonnative predators have not been recorded. Because of the nature of the site, such predators could not colonize the tank on their own; they would have to be introduced.

Unit 16: Peloncillo Mountains

This unit includes 366 ac (148 ha) of Coronado National Forest lands and 289 ac (117 ha) of private lands in Hidalgo County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Aquatic habitats proposed as critical habitat in this unit include Geronimo, Javelina, State Line, and Canoncito Ranch Tanks; Maverick Spring; and pools or ponds in the Cloverdale Cienega and along Cloverdale Creek below Canoncito Ranch Tank. Breeding occurs in State Line and Canoncito Ranch Tanks, and possibly other aquatic sites. Canoncito Ranch and Geronimo tanks were occupied at the time of listing. The occupancy status of the other sites at that time is unknown. All four of the tanks and Maverick Spring have recent records of frogs (2007 to the present) and are considered currently occupied. Frogs disperse from Canoncito Ranch Tank into Cloverdale Cienega and Cloverdale Creek when water is present. This unit is managed as a metapopulation.

Also included in this critical habitat proposal are intervening drainages and uplands needed for connectivity among these aquatic sites, including: (1) Cloverdale Creek from Canoncito Ranch Tank downstream to rock pools about 630 feet (192 m) below the Cloverdale Road crossing of Cloverdale Creek, including Cloverdale Cienega; (2) from Geronimo Tank downstream in an unnamed drainage to its confluence with Clanton Draw, then upstream to the confluence with an unnamed drainage, and upstream in that drainage to its headwaters, across a mesa to the headwaters of an unnamed drainage, then downslope through that drainage to State Line Tank; (3) from State Line Tank upstream in an unnamed drainage to a mesa, then directly overland to the headwaters of Cloverdale Creek, and then downstream in Cloverdale Creek to Javelina Tank; and (4) from Javelina Tank downstream in Cloverdale Creek to the Canoncito Ranch Tank, to include Maverick Spring.

Periodic drought dries most of the aquatic sites completely or to small pools, which limits population growth potential. Nonnative sportfish are present at Geronimo Tank and may preclude successful recruitment. Occurrence of chytridiomycosis in this area has not been investigated, but may also be a limiting factor.

Sky Island Alliance is working with partners to restore the Cloverdale Cienega, which should improve aquatic habitats for Chiricahua leopard frogs. The owner of the Canoncito Ranch has signed onto a Safe Harbor Agreement for the Chiricahua leopard frog. Under section 4(b)(2) of the Act, the private lands in Unit 16 are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Unit 17: Cave Creek

This unit includes 234 ac (95 ha) of Coronado National Forest lands and 92 ac (37 ha) of private lands owned by the American Museum of Natural History in the Chiricahua Mountains, Cochise County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

Included in the proposed critical habitat are an approximate 5.84-mi (9.41-km) reach of Cave Creek and associated ponds in or near the channel, from Herb Martyr Pond downstream to the eastern U.S. Forest Service boundary, to include John Hands Pond and a spring-fed pond at the Southwest Research Station. PCEs 1 and 2 are present. This site will be managed as a metapopulation.

Herb Martyr Pond is the type locality for the Chiricahua leopard frog; however, no frogs have been observed at the site since 1977. The pool behind the dam is entirely silted in, and pools at the base of the dam are probably not adequate for Chiricahua leopard frog survival or reproduction. However, with restoration this site could once again support Chiricahua leopard frogs. The pond below the dam at John Hands appears suitable for occupancy, but Chiricahua leopard frogs have not been recorded there since 1966. The spring-fed pond at the Southwest Research Station appears to be excellent habitat, but we have no record of the species occurring there. Chiricahua leopard frogs were occasionally seen in Cave Creek through 2002, and an egg mass observed in Cave Creek on the Southwest Research Station property indicates it may be suitable for breeding, although the creek dries to shallow pools in most years in May and June. This unit is not currently occupied by Chiricahua leopard frogs; however, the Southwest Research Station is headstarting tadpoles collected from Leslie Canyon NWR (Unit 18); they will be captively bred and released at the pond on the station's property as early as 2011.

Scarcity of water can occur in drought years; however, the pond at the Southwest Research Station is fed by a well and thus is buffered against drought. Bullfrogs occur to the east but have never been recorded in the unit. The current status and past history of chytridiomycosis in this unit are unknown; however, the pond at the Southwest Research Station is fed by a warm spring and could provide some buffer against the disease. Rainbow trout were present and occurred concurrently with Chiricahua leopard frogs at Herb Martyr Pond, but no trout are currently known in the unit.

The Southwest Research Station has signed a Safe Harbor Agreement for the Chiricahua leopard frog and is an active participant in recovery. The Service and AGFD are working with additional private landowners downstream of the proposed critical habitat to bring them into the Safe Harbor Agreement. Under section 4(b)(2) of the Act, the American Museum of Natural History lands are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Unit 18: Leslie Creek

The unit consists of 26 ac (11 ha) of National Wildlife Refuge lands on Leslie Canyon NWR, Cochise County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCE 1) to support life-history functions essential for the conservation of the species.

This unit is a stream system with intermittent pools and two small impoundments. Its upstream limit is the Leslie Canyon NWR boundary, and its downstream limit is at the crossing of Leslie Canyon Road, an approximate stream distance of 4,094 ft (1,248 m).

Chiricahua leopard frogs were present in this unit at the time of listing and are currently extant. This population is too far (24.8 mi (36.7 km)) from the next nearest breeding site (North Tank in Unit 19) to be part of a metapopulation. Hence it is managed as an isolated population.

Drought and lack of pools are limiting factors in this unit. Chiricahua leopard frogs are positive for chytridiomycosis at this site, and although they are persisting with the disease, the population is not robust, and the effects of the disease may be responsible in part. Bullfrogs occur in ponds to the east, but have never been recorded in Leslie Creek.

The endangered Huachuca water-umbel, endangered Yaqui chub (*Gila purpurea*), and endangered Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*) all occur in Leslie Creek, and the area is managed to conserve the aquatic and riparian habitats of the canyon. A landowner adjacent to the the refuge has signed a Safe Harbor Agreement for the Chiricahua leopard frog and other species. With future habitat renovations and population reestablishments, there is some potential for developing additional populations of Chiricahua leopard frogs in this area, which could form a metapopulation with the Leslie Canyon population.

Unit 19: Rosewood and North Tanks

This unit includes 19 ac (8 ha) of private land and 78 ac (31 ha) of land owned by the Arizona State Land Department in the San Bernardino Valley, Cochise County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Included in this proposed unit are two livestock tanks (Rosewood and North Tanks) and drainages and uplands to allow for movement of frogs between them. North Tank is on private land, while Rosewood Tank and the connecting drainage are on Arizona State Land Department lands. Rosewood Tank was occupied at the time of listing, but North Tank was not. Both tanks are currently occupied. Rosewood Tank is a breeding population, and North Tank probably supports breeding. The North Tank is a recent (2008) reestablishment site for which breeding has not yet been documented. Two interconnected breeding sites do not make a metapopulation (four or more interconnected breeding sites are necessary, Service 2007, p. K–3); hence this unit is considered an isolated population.

The intervening drainages and uplands proposed as critical habitat are as follows: (1) From Rosewood Tank downstream in an unnamed drainage that is parallel to and just south of the Guadalupe Canyon Road to its confluence with a large unnamed drainage, then upstream in that drainage; (2) under Guadalupe Canyon Road and east to its confluence with a minor unnamed drainage; (3) upstream in that unnamed minor drainage to its headwaters; (4) then overland to the headwaters of another unnamed drainage; (5) downstream in that drainage to its confluence with the drainage containing North Tank; and (6) downstream in that drainage to North Tank.

Chytridiomycosis has not been recorded in this unit despite its presence nearby at San Bernardino NWR. High pH at Rosewood Tank may be a limiting factor for the disease organism. No nonnative predators have been found at either of these tanks. Rosewood Tank has been equipped with two small, concrete-lined refugia ponds fed by a well so that the frogs can persist at this site even if the livestock tank, which is filled by runoff, goes dry.

For many years, the owners of the Magoffin Ranch in this unit have made unprecedented efforts to maintain this population. The private and Arizona State Land Department lands in the proposal are covered by a Safe Harbor Agreement for the Chiricahua leopard frog. The Magoffin Ranch owners have worked tirelessly for the recovery of this species. Under section 4(b)(2) of the Act, lands in this unit are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Recovery Unit 4 (Piñaleno-Galiuro-Dragoon Mountains, Arizona)

Unit 20: Deer Creek

This unit consists of 17 ac (7 ha) of Coronado National Forest, 69 ac (28 ha) of Arizona State Land Department lands, and 34 ac (14 ha) of private lands in the Galiuro Mountains, Graham County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCEs 1 and 2 are present in this unit.

Included in proposed critical habitat are Home Ranch, Clifford's, Vermont, and Middle Tanks, a series of 10 impoundments on the Penney Mine lease, and intervening drainages, primarily Deer Creek, and associated uplands and ephemeral tanks that provide corridors for movement among these tanks. Breeding has been confirmed on Deer Creek above Clifford's Tank, and in Home Ranch and Vermont Tanks, and is suspected in the other three sites named above when water is present long enough for tadpoles to metamorphose into adults (3 to 9 months). Home Ranch Tank supports a robust or nearly robust population of Chiricahua leopard frogs. This unit functions as a metapopulation. Intervening drainages include: (1) Deer Creek from a point where it exits a canyon and turns abruptly to the east, upstream to its confluence with an unnamed drainage, upstream in that drainage to a confluence with four other drainages, upstream from that confluence in the western drainage to Clifford's Tank, upstream from that confluence in the west-central drainage to an unnamed tank, then directly overland southeast to another unnamed tank, then downstream from that tank in an unnamed drainage to the aforementioned confluence and upstream in that unnamed drainage to a saddle, and downstream from that saddle in an unnamed drainage to its confluence with an unnamed tributary to Gardner Canyon, and upstream in that unnamed tributary to Home Ranch Tank; (2) from the largest of the Penney Mine Tanks directly overland and southwest to an unnamed tank, and downstream from that tank in an unnamed drainage to the aforementioned confluence, to include another unnamed tank situated in that drainage; (3) from Vermont Tank directly overland and east to Deer Creek; and (4) from Middle Tank upstream in an unnamed drainage to a saddle, and then directly downslope to Deer Creek.

The primary threat to Chiricahua leopard frogs and their habitats in this unit is periodic drought that results in breeding sites drying out. During a severe drought in 2002, all but one of the waters in the unit dried out. The occupancy status of the unit at the time of listing is unknown. Frogs in this unit reportedly died for unknown reasons in the 1980s (Goforth 2005, p. 2), possibly indicative of chytridiomycosis; however, no Chiricahua leopard frogs have tested positive for the disease from this unit. The only nonnative aquatic predator recorded in this unit is the barred tiger salamander.

Recovery work has occurred in this unit, including headstarting of egg masses and reestablishment and augmentation of populations. The Service, AGFD, Arizona State Land Department, and an agate miner (Penney Mine Tanks) have drafted a conservation plan for managing habitats on the mine lease, but funds are lacking to implement that plan.

Unit 21: Oak Spring and Oak Creek

This unit consists of 27 ac (11 ha) of Coronado National Forest lands in the Galiuro Mountains, Graham County, Arizona. Oak Spring and Oak Creek are proposed as critical habitat because they

are essential for the conservation of the species.

The unit is currently occupied; however, its occupancy status at the time of listing is unknown. It is just north of Deer Creek (Unit 20) but is too far (about 1.6 mi (2.6 km)) overland (via straight-line distance) from the nearest aquatic sites (Home Ranch and Clifford's Tanks) in that unit. Connectivity is further complicated by a ridgeline between Oak Spring and Home Ranch Tank. Hence, this site is managed as an isolated population.

PCEs 1 and 2 are present in this unit. The site does not support enough frogs to be considered a robust population. This unit is an approximate 1.06-mi (1.71-km) intermittent reach of an incised canyon punctuated by pools of varying permanence, from Oak Spring downstream in Oak Creek to where a hiking trail intersects the creek. The largest pool, Cattail Pool, is permanent or nearly so and typically supports several Chiricahua leopard frogs and breeding. The reach proposed for critical habitat captures the area where Chiricahua leopard frogs have been seen.

The primary threat in this unit is extended drought during which all of the pools are subject to reduction or drying. Cattail Pool is spring-fed, and is likely the last pool to dry out. Oak Spring is also tapped for water developments, which may limit the capability of the site to support frogs. Chiricahua leopard frogs have been headstarted and released at this site to augment the population.

Unit 22: Dragoon Mountains

This unit includes 74 ac (30 ha) of Coronado National Forest lands in Cochise County, Arizona. This uit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Shaw Tank and Tunnel Spring in Middlemarch Canyon are proposed as critical habitat in this unit and are currently occupied breeding sites. The latter is a robust population that was occupied at the time of listing. Shaw Tank is a reestablishment site that was not known to be occupied in 2002.

Also included in the proposal as proposed critical habitat is Halfmoon Tank, which supported a robust population of Chiricahua leopard frogs until 2002. It dried or nearly dried that year and may or may not have supported Chiricahua leopard frogs at the time of listing. PCE 1 at Halfmoon Tank has been compromised by siltation and recent drought. The tank is in need of renovation so that it may again dependably hold water and support breeding.

Currently, not enough breeding sites exist to comprise a metapopulation (four are necessary) in this unit; however, with additional habitat creation or renovation, a metapopulation may be possible, which is needed for this recovery unit (the only other metapopulation is in Unit 20).

Also included in this critical habitat proposal are intervening drainages for connectivity, including Stronghold Canyon from Halfmoon Tank to Cochise Spring, then upstream in an unnamed canyon to Shaw Tank, and continuing upstream to the headwaters of that canyon, across a saddle and downstream in Middlemarch Canyon to Tunnel Spring.

Threats to the Chiricahua leopard frog and its habitat are primarily scarcity of suitable breeding habitat and loss of that habitat during drought. Tunnel Spring is spring-fed and thus buffered against drought; however, Shaw and Halfmoon Tanks are filled with runoff. Neither nonnative predators nor chytridiomycosis have been noted in these populations and habitats, although if introduced they would constitute additional stressors.

Recovery work, including headstarting of eggs collected from Tunnel Spring and establishment of a new population at Shaw Tank with reared tadpoles and frogs, has been accomplished in this unit, and the U.S. Forest Service's livestock permittee has been an enthusiastic participant in those recovery activities.

Recovery Unit 5 (Mogollon Rim-Verde River, Arizona)

Unit 23: Buckskin Hills

This unit includes 232 ac (94 ha) of Coconino National Forest lands in Yavapai County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Included in this proposed critical habitat unit are six tanks occupied at the time of listing (Sycamore Basin, Middle, Walt's, Partnership, Black, and Buckskin) that form a metapopulation. Frogs currently occur at Middle and Walt's Tanks. Also included in the critical habitat proposal are two tanks occupied in 2001 that probably dried out during a drought in 2002: Doren's Defeat and Needed Tanks. The former holds water well and is about 0.5 mi (0.8 km) from Partnership Tank and 0.67 mi (1.07 km) from Walt's Tank. Needed Tank may not hold water long enough for breeding, but it provides a stopover for dispersing frogs.

This proposed critical habitat also includes drainages and uplands likely used as dispersal corridors among these tanks, including: (1) From Middle Tank downstream in Boulder Canyon to its confluence with an unnamed drainage that comes in from the northwest, to include Black Tank, then upstream in that unnamed drainage to a saddle, to include Needed Tank, downstream from the saddle in an unnamed drainage to its confluence with another unnamed drainage, downstream in that drainage to the confluence with an unnamed drainage, to include Walt's Tank, and upstream in that unnamed drainage to Partnership Tank; (2) from Doren's Defeat Tank upstream in an unnamed drainage to Partnership Tank; (3) from the confluence of an unnamed drainage with Boulder Canyon west to a point where the drainage turns southwest, then directly overland to the top of Sycamore Canyon, and then downstream in Sycamore Canyon to Sycamore Basin Tank; and (4) from Buckskin Tank upstream in an unnamed drainage to the top of that drainage, then directly overland to an unnamed drainage that contains Walt's Tank.

The greatest threats are reintroduction of nonnative species and drought. Divide Tank, which is adjacent to Highway 260, has supported nonnatives in the past and is a likely place for future illegal stockings of fish or bullfrogs. If established there, nonnatives could spread to sites proposed herein as critical habitat. All of the tanks proposed as critical habitat are filled by runoff; hence, they are vulnerable to drying during drought. When the species was proposed for listing, the populations in the Buckskin Hills were unknown; however, during 2000–2001, frogs were found at 11 sites. After a severe drought in 2002, frogs only remained at Sycamore Basin and Walt's Tanks. Drilling a well to make one or more of the tanks less susceptible to drying is cost prohibitive because of the extreme depth to groundwater. Because the tanks depend on runoff, and as most tanks went dry in 2002, protecting more than the minimum four breeding sites needed for a metapopulation is warranted. Chytridiomycosis has not been found in any wild frogs in the Buckskin Hills; however, the disease occurs in Arizona treefrogs (*Hyla wrightorum*) and western chorus frogs (*Pseudacris triseriata*) less than 10 mi (16 km) to the east, and frogs collected from Walt's Tank

subsequently tested positive for the disease in captivity. It is unknown whether they contracted the disease in the wild or while captive.

Much recovery work has been accomplished in this unit, including captive rearing, population reestablishments, tank renovations, erosion control, fencing, and elimination of nonnative predators such as sportfishes and crayfish.

Unit 24: Crouch, Gentry, and Cherry Creeks, and Parallel Canyon

This unit includes 334 ac (135 ha) of Tonto National Forest lands, 64 ac (26 ha) of AGFD lands, and 6 ac (3 ha) of private lands in Gila County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Included as proposed critical habitat are Trail Tank, HY Tank, Carroll Spring, West Prong of Gentry Creek, Pine Spring, and portions of Cherry and Crouch Creeks, all of which provide breeding or potential breeding habitat. Also included are intervening drainages and uplands needed for connectivity among breeding sites, including: (1) Cherry Creek from Rock Spring upstream to its confluence with an unnamed drainage, upstream in that drainage and across a saddle, then downstream in an unnamed drainage to Trail Tank; (2) Crouch Creek from its headwaters just south of Highway 288 downstream to an unnamed drainage leading to Pine Spring, to include Cunningham Spring and Carroll Spring, then upstream in that unnamed drainage from Crouch Creek to Pine Spring; (3) from HY Tank downstream in an unnamed drainage to Cherry Creek, to include Bottle Spring; (4) from Cunningham Spring east across a low saddle to West Prong of Gentry Creek where the creek turns southwest; and (5) from Bottle Spring south over a low saddle to the headwaters of Crouch Creek.

At the time of listing, Chiricahua leopard frogs occurred in Crouch Creek, Carroll Spring, HY Tank, Bottle Spring, and West Prong of Gentry Creek. Trail Tank has nearly permanent water and is in the Parallel Canyon drainage, but close to the divide with Cherry Creek. In May 2010, it was renovated to remove a breeding population of bullfrogs and green sunfish. Additional followup removal of bullfrogs occurred in July 2010. Bullfrogs at the nearby ephemeral Roadside Tank were also eliminated in 2010. Once bullfrogs are confirmed absent, plans will move forward to translocate Chiricahua leopard frogs to Trail Tank.

Chiricahua leopard frogs were moved to Pine Spring in 2006, and habitat work was accomplished there to improve pool habitats. However, no frogs were observed during a site visit in May 2010. The connectivity of Pine Spring to Cunningham Spring and other sites upstream in Crouch Creek is complicated by a waterfall below Cunningham Spring; however, an overland route of less than a mile provides access around the waterfall.

Chiricahua leopard frogs were first noted in Cherry Creek in 2008, just before additional frogs were released into that site. Reproduction has been noted and frogs were observed in Cherry Creek in 2010.

Threats in this unit include predation by nonnative species, including bullfrogs, crayfish, and sportfish; predation by tiger salamanders (presumably native); chytridiomycosis, which was found in a Cherry Creek frog in 2009; and minimal water. None of the populations are robust due to the small size of breeding habitats. It is hoped that Trail Tank may provide enough aquatic habitat for a robust population. Other sites have renovation potential and could possibly in the future support robust populations, but none of the other sites currently have the PCEs due to presence of nonnative species or other factors.

This unit has received habitat work, renovations, nonnative species control, headstarting, population reestablishment, and population augmentation.

Unit 25: Ellison and Lewis Creeks

This unit includes 83 ac (34) of Tonto National Forest lands and 15 ac (6 ha) of private lands in Gila County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCEs 1 and 2 are present in this unit.

Included in this critical habitat proposal are potential breeding sites at Moore Saddle Tank #42, Ellison Creek just east of Pyle Ranch, Lewis Creek downstream of Pyle Ranch, and Low Tank. Intervening drainages that provide connectivity among the latter three sites are also proposed as critical habitat as follows: (1) Unnamed tributary to Ellison Creek from its confluence with an unnamed drainage downstream to Ellison Creek; (2) then directly west across the Ellison Creek floodplain and over a low saddle to Lewis Creek below Pyle Ranch; (3) then downstream in Lewis Creek to its confluence with an unnamed drainage; and (4) then upstream in that unnamed drainage to Low Tank.

Moore Saddle Tank #42 is about 0.8 mi (1.3 km) overland from Low Tank; hence, it is within the one-mile overland distance for reasonable dispersal likelihood; however, there are four drainages that bisect that route, and it is likely that any Chiricahua leopard frogs traversing those uplands would move down or upstream in one of those drainages rather than crossing them. As a result, Moore Saddle Tank #42 will be managed as an isolated and potentially robust population.

This leaves the other sites one short of the four needed to form a metapopulation; however, no other sites in the area are known that contain the PCEs or have the potential for developing the PCEs. Additional exploration of the area and likely some habitat renovation will be needed to secure a fourth site.

Chiricahua leopard frogs have occasionally been found in Ellison Creek. In 1998, small numbers of frogs were found here, but were not seen again until 2006. Despite intensive surveys, no frogs were found in 2007 or 2008.

Whether this unit was occupied at the time of listing is unclear. In 2009, egg masses from Crouch Creek in Unit 24 were headstarted, and tadpoles and young frogs were stocked at the four sites listed above as potential breeding sites. Frogs from those releases appeared to be doing well at all four sites in 2010. Additional releases of Crouch Creek frogs occurred in July 2010.

Recovery Unit 6 (White Mountains-Upper Gila, Arizona and New Mexico)

Unit 26: Concho Bill and Deer Creek

This unit includes 17 ac (7 ha) of Apache-Sitgreaves National Forest in Apache County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCE 1 is present. Included in this critical habitat proposal is a spring at Concho Bill and a meadow-ephemeral stream reach extending for approximately 2,667 ft (813 m) below the spring.

This is an isolated population that was established through captive breeding and translocation of stock from Three Forks, which is also in recovery unit 6 in Arizona. Frogs were first released at the spring pool in 2000; subsequent releases have augmented the population. Whether the frogs persisted after that initial release until the time of listing is unknown. The population is small and generally only a few frogs if any are detected during surveys.

The primary threat is the limited pool habitat for breeding and overwintering, which thus far has limited the size of the population. Small populations are subject to extirpation from random variations in demographics of age structure and sex ratio, and from disease and natural events (Service 2007, p. 38). In addition, crayfish are nearby in the Black River and could invade this site.

Unit 27: Campbell Blue and Coleman Creeks

The unit includes 174 ac (70 ha) of Apache-Sitgreaves National Forest in Greenlee County, Arizona. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCE 1) to support life-history functions essential for the conservation of the species.

Included as critical habitat is an approximate 2.04-mi (3.28-km) reach of Campbell Blue Creek from the western boundary of Luce Ranch upstream to the Coleman Creek confluence, and Coleman Creek from its confluence with Campbell Blue Creek upstream to its confluence with Canyon Creek, an approximate stream distance of 1.04 mi (1.68 km).

This unit is too far from other known Chiricahua leopard frog populations to be considered part of a metapopulation. The nearest population is about 12.2 mi (19.6 km) to the northwest in Unit 26. Frogs were observed in Unit 27 in 2002, and then again in 2010. No more than a few frogs were seen during surveys (two were observed in 2010); however, the site is difficult to survey and frogs have many opportunities for hiding from observers.

Crayfish and introduced rainbow trout are present throughout this stream system, which likely limit recruitment of frogs into the population. In 2010, the creeks had numerous beaver ponds and vegetation cover that are probably important as protection from predators. Backwaters and off-channel pools provide better habitat than the often swiftly moving, shallow water in the creeks. The presence of chytridiomycosis has not been investigated in this unit.

Unit 28: Tularosa River

This unit contains 335 ac (135 ha) of Gila National Forest and 1,575 ac (637 ha) of private lands in Catron County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

This unit is an approximate 19.31-mi (31.08-km) reach of the Tularosa River from Tularosa Spring downstream to the entrance to the canyon below Hell Hole. Frogs were observed in this reach in 2002 at the time of listing and continue to persist. This unit is isolated from other populations, but is a large system potentially capable of supporting a robust population.

In 2009, small numbers of frogs were found at two sites in the unit. The frogs may occur throughout this reach of the river, but breeding is likely limited to isolated localities where nonnative predators are rare or absent. Crayfish are abundant, rainbow trout are present, and bullfrogs have recently been found downstream of the Apache Creek confluence and just below Hell Hole. Chytridiomycosis is present. The first Chiricahua leopard frogs to test positive for the disease in New Mexico (1985) were found at Tularosa Spring. The frogs were found at that site through 2005, but none have been observed since. A robust population was present nearby at a pond in a tributary to Kerr Canyon, in Kerr Canyon, and at Kerr Spring, but experienced a die-off from chytridiomycosis in 2009; it is unknown if frogs persist in that area. Chytridiomycosis is considered a serious threat in this unit. Both bullfrogs and crayfish are relatively recent arrivals in this system and limit, but thus far have not precluded, recovery opportunities.

The proposed critical habitat does not extend much below Hell Hole because of a lack of recent frog observations in that reach, presumably due to prevalence of nonnative species and disease. Chiricahua leopard frogs occurred in the 1980s in this lower reach but have not been observed since.

Unit 29: Deep Creek Divide Area

This unit consists of 408 ac (165 ha) of Gila National Forest and 102 ac (41 ha) of private lands in Catron County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCEs 1 and 2) to support life-history functions essential for the conservation of the species.

Included as proposed critical habitat are three livestock tanks (Long Mesa, Cullum, and Burro Tanks) in the Deep Creek Divide area and connecting reaches of North and South Fork of Negrito Creek above their confluence. Long Mesa Tank is currently occupied; surveys in 2010 did not find frogs at Cullum Tanks or the North Fork of Negrito Creek, although Chiricahua leopard frogs occupied these sites in 2009. Frogs were last found in South Fork of Negrito Creek in 2006, and at Burro Tank in 2002. Four impoundments on private lands along South Fork of Negrito Creek have not been surveyed for frogs; however, it is presumed they serve or once served as habitat for Chiricahua leopard frogs. Long Mesa, Cullum, and Burro Tanks, and South Fork of Negrito Creek were occupied at the time of listing. All sites are thought to retain the PCEs.

Also included in this proposed critical habitat are intervening drainages and uplands for movement among these breeding sites as follows: (1) From Burro Tank downstream in Burro Canyon to Negrito Creek, then upstream in Negrito Creek to the confluence of South Fork and North Fork of Negrito Creek; (2) from Long Mesa Tank overland and east to Shotgun Canyon, then downstream in that canyon to Cullum Tank; and (3) from Cullum Tank downstream in Shotgun and Bull Basin Canyons to an unnamed drainage, then upstream in that drainage to its confluence with a minor drainage coming off Rainy Mesa from the east-northeast, then upstream in that drainage and across Rainy Mesa to Burro Tank.

Populations in this unit have suffered from chytridiomycosis. A complex of tanks, springs, and streams in the Deep Creek Divide area was once a stronghold for the Chiricahua leopard frog on the Gila National Forest. However, most of those populations contracted the disease, suffered die-offs, and disappeared. Frogs on the North Fork of Negrito Creek were few in number and appeared sick in 2008. Their possible absence in 2010 may be a result of a disease-related die-off. Presence of the disease compromises PCE 1 and limits recovery opportunities in this unit.

Unit 30: Main Diamond Creek

This unit consists of 14 ac (6 ha) of Gila National Forest and 40 ac (16 ha) of private lands along Main Diamond Creek downstream of Links Ranch, Catron County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs (PCE 1) to support life-history functions essential for the conservation of the species.

This site currently supports a robust population. Chiricahua leopard frogs may occur periodically or regularly at an impoundment at Links Ranch, but that impoundment also contains bullfrogs and may have sportfish, as well. This proposed critical habitat includes an approximate 3,980-ft (1,213-m), perennial or nearly perennial reach of Main Diamond Creek from the

downstream (western) boundary of Links Ranch downstream through a meadow to the confluence of a drainage that comes in from the south, which is also where the creek enters a canyon. This population is about a 4.6-mi (7.4-km), straight-line distance over rugged terrain to the next nearest population at Beaver Creek (Unit 31). As a result, it is managed as an isolated, robust population.

Chytridiomycosis has not been found in this population, but is a potential threat. Bullfrogs at the impoundment likely prey upon Chiricahua leopard frogs. The creek is primarily privately owned; the future plans of the landowners regarding land management in the area are unknown.

Unit 31: Beaver Creek

This unit consists of 132 ac (54 ha) of Gila National Forest and 25 ac (10 ha) of private lands near Wall Lake, Catron County, New Mexico. This unit is an approximate 5.59-mi (8.89-km) portion of Beaver Creek beginning at a warm spring and running downstream to its confluence with Taylor Creek. Below that confluence, the stream is known as the East Fork of the Gila River. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCE 1 is present in this unit.

The status of the population at the time of listing is unknown; however, Chiricahua leopard frogs are currently present. The population is not well studied; Beaver Creek is, however, a long enough reach that it could support a robust population. The nearest known population of Chiricahua leopard frogs is at Main Diamond Creek (Unit 30), approximately a 4.6-mi (7.4-km), straight-line distance away over rugged terrain. As a result, this site is managed as an isolated population.

The spring at the upstream end of the unit is a warm spring, which may help frogs survive with chytridiomycosis, if the disease is present or colonizes the area in the future (Johnson and Smorynski 1998, p. 45; Service 2007, p. 26). Rainbow trout, bass (*Microptus* sp.), and bullfrogs reportedly occur along Beaver Creek with Chiricahua leopard frogs, although trout are limited to the cooler waters near the confluence with Taylor Creek (Johnson and Smorynski 1998, pp. 44–45). The mechanisms by which Chiricahua leopard frogs coexist with these nonnative predators are unknown; however, habitat complexity and adequate cover are likely important features that may need special management.

Recovery Unit 7 (Upper Gila-Blue River, Arizona and New Mexico)

Unit 32: Left Prong of Dix Creek

This unit contains 13 ac (5 ha) of Apache-Sitgreaves National Forest lands in Greenlee County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCE 1 is present.

This reach runs from a warm spring above "The Hole" and continues to the confluence with the right prong of Dix Creek, an approximate stream distance of 4,248 ft (1,296 m). This population was discovered in 2003; its status at the time of listing is unknown. Chiricahua leopard frogs were found again in 2005. They were not observed in 2010, but a large boulder has lodged itself in the canyon, blocking access to the spring; hence, the warm spring was not surveyed. In 2003, Chiricahua leopard frogs were also reported from below a warm spring in the Right Prong of Dix Creek; however, surveys in 2010 only found lowland leopard frogs. Either the frogs in this reach were misidentified in 2003, or lowland leopard frogs have displaced Chiricahua leopard frogs in the Right Prong. Currently, the population in the Left Prong is isolated.

The next nearest known Chiricahua leopard frog population is at Rattlesnake Pasture Tank (Unit 33), about a 6.0-mi (9.6-km), straight-line distance over rough terrain. A number of stock tanks have potential to connect these two sites and form a metapopulation; however, they have not been investigated in enough detail to understand whether PCEs are present or have the potential to be developed. No Chiricahua leopard frogs have ever been found in these tanks.

This proposed critical habitat overlaps that of critical habitat for Gila chub (*Gila intermedia*), which provides a level of protection for this unit. A healthy population of Gila chub, as well as other native fishes, occurs in the Left Prong of Dix Creek. A natural rock barrier about a mile below the confluence of the Right and Left Prongs serves as a barrier to upstream movement of nonnative fishes from the San Francisco River. The warm waters of the spring may allow persistence of Chiricahua leopard frogs if chytridiomycosis is present or if it colonizes this area in the future. A rough dirt road crosses the left prong of Dix Creek in the proposed critical habitat unit. It likely contributes some sediment to the stream.

Unit 33: Rattlesnake Pasture Tank and Associated Tanks

This unit contains 59 ac (24 ha) of Apache-Sitgreaves National Forest in Greenlee County, Arizona. This unit is proposed as critical habitat because it is essential for the conservation of the species. PCEs 1 and 2 are present in this unit.

Included in the proposed critical habitat are three stock tanks: Rattlesnake Pasture, Rattlesnake Gap, and Buckhorn. Also included are intervening drainages and uplands for connectivity, including: (1) From Rattlesnake Pasture Tank downstream in an unnamed drainage to Red Tank Canyon (including Buckhorn Tank), then upstream in Red Tank Canyon to Rattlesnake Gap Tank; and (2) from Rattlesnake Gap Tank upstream in an unnamed drainage to its confluence with a minor drainage, then upslope to a saddle, and across that saddle and directly downslope to Rattlesnake Pasture Tank.

Chiricahua leopard frogs were discovered at Rattlesnake Pasture Tank in 2003, and are currently there. Status at the time of listing is unknown. The species has not been found at Rattlesnake Gap or Buckhorn Tanks; however, all three tanks are close to each other and well connected via drainages to allow movement of frogs from Rattlesnake Pasture Tank to these other tanks. Rattlesnake Gap and Buckhorn Tanks appear to have fairly permanent water. Other tanks in the area, including Cold Spring Mountain Tank and Rattlesnake Tanks #1 and 2, do not hold water consistently enough to support a breeding population of frogs (and Chiricahua leopard frogs have not been found at these other tanks). The three tanks proposed form a nucleus from which a metapopulation could be constructed; however, habitat work will be needed to achieve the fourth breeding site of the metapopulation.

Tiger salamanders, presumably native Arizona tiger salamanders (*Ambystoma mavortium nebulosum*), occur in all three tanks and likely prey upon Chiricahua leopard frogs to some degree. However, a healthy population of Chiricahua leopard frogs occurs with Arizona tiger salamanders at Rattlesnake Pasture Tank. Three juvenile to small adult bullfrogs, which were likely immigrants from another site, were found at Rattlesnake Gap Tank in June 2010. If a population of bullfrogs is established at Rattlesnake Gap Tank, it would threaten Chiricahua leopard frogs in Rattlesnake Pasture Tank and the capacity for recovery in this recovery unit 7. These tanks are fed by rainfall

runoff, but Rattlesnake Pasture Tank may be spring fed as well. Nonetheless, there is some risk that these tanks, particularly Buckhorn Tank, could dry out during an extended drought.

Unit 34: Coal Creek

This unit consists of 7 ac (3 ha) of Apache-Sitgreaves National Forest in Greenlee County, Arizona, and is proposed as critical habitat because it is essential for the conservation of the species. This is an approximate 3,447-ft (1,051-m) reach of Coal Creek from Highway 78 downstream to the confluence with an unnamed drainage. Seasonally this creek dries up to isolated pools where Chiricahua leopard frogs take refuge. However, during the spring and summer, Coal Creek typically carries water and the frogs distribute themselves throughout this reach. PCE 1 is present.

This population was discovered in 2003, and is considered to be still in existence. Status at the time of listing is unknown. This unit is isolated from other Chiricahua leopard frog populations, the nearest of which is Rattlesnake Pasture Tank in Unit 33, 5.1 mi (8.2 km) to the west over rugged terrain. Hence, it is currently managed as an isolated population; however, it may not have sufficient habitat to support a robust population in most years. There may be some potential for linking this population to Units 32 or 33, if aquatic habitats in between could be identified, renovated as needed, and populations of frogs established. However, potential sites and presence of PCEs have not been investigated in any detail. No Chiricahua leopard frogs have been found at sites between Units 32, 33, and 34.

Neither chytridiomycosis nor nonnative predators is known to be a problem in this unit; however, if introduced, they could be a serious impediment to recovery, particularly when the creek dries to isolated pools, concentrating frogs and any predators or disease in remaining waters. Wildfire in the area could result in ash flow, sedimentation, and erosion in Coal Creek, degrading or eliminating habitat for Chiricahua leopard frogs. The primary threat is probably extended drought, during which the aquatic habitats of the frog could be severely limited or could dry out completely, resulting in extirpation of this isolated population.

Unit 35: Blue Creek

This unit includes 24 ac (10 ha) of Bureau of Land Management and 12 ac (5 ha) of private lands in Grant County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

Included in this unit is an approximate 2.37-mi (3.81-km) reach of Blue Creek from adjacent to a corral on private lands downstream to the confluence of a drainage that comes in from the east. This is an area where Chiricahua leopard frogs are currently known to breed. Additional habitat may occur upstream on private or State lands; however, the private reach immediately above the proposed critical habitat lacks breeding pools and no frogs have been found there (Barnitz 2010, p. 1). The lands upstream of there have not been surveyed.

PCE 1 is present in this unit; however, this unit is much too far from other known Chiricahua leopard frog populations to be considered part of a metapopulation. The nearest population is at Coal Creek (Unit 34) more than 22 mi (35 km) away by way of a straight-line distance.

The primary limiting factor in this proposed critical habitat reach is lack of perennial flow and periodic flash flooding during the summer. In some years, the entire reach goes dry in June; however, in wetter periods frogs breed throughout this reach. Scouring floods, which happen during or after summer rains, likely wash tadpoles downstream and out of the unit. Nonnative aquatic predators are not known in the unit, and although a Chiricahua leopard frog from this unit tested positive for chytridiomycosis in 2009, no die-offs have been noted. Wildfire in the area could result in ash flow, sedimentation, and erosion in Blue Creek, degrading or eliminating habitat for Chiricahua leopard frogs.

Recovery Unit 8 (Black-Mimbres-Rio Grande, New Mexico)

Unit 36: Seco Creek

This unit includes 610 ac (247 ha) of private lands and 66 ac (27 ha) of Gila National Forest in Sierra County, New Mexico. This area is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

The proposed critical habitat includes: (1) The North Fork of Seco Creek from Sawmill Well downstream to the confluence with South Fork of Seco Creek, including from west to east, Sucker Ledge, Davis Well, North Seco Well, Pauge Well, and LM Bar Well; (2) South Seco Creek from South Seco Well downstream to its confluence with the North Fork of Seco Creek; (3) Seco Creek from the confluence with North and South Forks of Seco Creek to the confluence with Ash Creek, including Fish Well and Johnson Well; and (4) Ash Creek from Artesia Well downstream to Seco Creek.

Chiricahua leopard frogs are known to breed at all of the above mentioned wells except Sawmill and Johnson Wells. They also breed in a perennial reach of Seco Creek below Johnson Well. Frogs were extant at Davis Well, LM Bar Well, North Seco Well, Pauge Well, and Sucker Ledge at the time of listing. Status at other sites in 2002 is unknown. All of the aquatic sites are currently occupied. PCEs 1 and 2 are present in the unit.

The aquatic sites form a metapopulation, and frogs move among these sites via reaches of the intervening creeks. This unit represents the strongest metapopulation in New Mexico.

Chytridiomycosis has caused extirpations in this region, and in 2001, four tadpoles from Seco Creek appeared to have damaged mouthparts consistent with the disease. However, no frogs have tested positive since then. Bullfrogs have been found occasionally, but the landowner (Ladder Ranch) dispatches them as they are discovered. Tiger salamanders (*Ambystoma mavortium*) occur in most waters on the Ladder Ranch and likely prey upon Chiricahua leopard frog tadpoles and small frogs, but the frogs and salamanders are able to coexist together. Most of the wells listed above are either artesian or equipped with solar-powered pumps, and thus provide dependable water through drought periods.

Recovery work in this unit has included fencing some of the waters from the bison that graze the area and reestablishment of populations using wild-to-wild translocations. The Ladder Ranch also monitors the frogs and habitats, and recently they have initiated a captive breeding facility and program to rear frogs for population augmentation and reestablishment. They also hold Seco Creek frogs in refugia near the ranch headquarters. Research on movements of Chiricahua leopard frogs using radiotelemetry has been funded by the Ladder Ranch and carried out in the Seco Creek area. Under section 4(b)(2) of the Act, private lands in this unit are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Unit 37: Alamosa Warm Springs

This unit consists of 54 ac (22 ha) of private, 25 ac (10 ha) of New Mexico State, and 0.2 ac (0.1 ha) of Bureau of Land Management lands at the headwaters of Alamosa Creek, Socorro County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species. PCE 1 is present in this unit.

Proposed critical habitat includes an approximate 4,974-ft (1,516-m) spring run from the confluence of Wildhorse Canyon and Alamosa Creek downstream to the confluence with a drainage that comes in from the north, which is below the gauging station in Monticello Box. This reach includes areas where frogs have been found in recent years (Christman 2006b, p. 11).

At its source, waters at Alamosa Warm Springs range from 77 to 85 °F (25.0 to 29.3 °C) (Christman 2006b, p. 3). Chytridiomycosis is present in this population, and presumably the warm waters allow persistence despite the disease.

This is a robust, breeding population, but it is too far removed from other Chiricahua leopard frog populations to be part of a metapopulation. The nearest population is in Unit 38, 20.3 mi (32.5 km) to the south-southeast. As a result, this site is managed as an isolated, robust population.

Alamosa Warm Springs is at the northeastern edge of the distribution of the Chiricahua leopard frog. The species was present at the time of listing and is currently present. This site is drought-resistant because of perennial spring flow. Nonnative aquatic predators are unknown at this site, but if introduced could pose a serious threat to the population. Heavy livestock grazing on the site, in the watershed, and a dirt road through the canyon have degraded the habitat for Chiricahua leopard frogs, and flooding likely flushes tadpoles out of the unit periodically (Christman 2006b, pp. 5–6).

The endangered Alamosa springsnail (*Tryonia alamosae*) occurs at Alamosa Warm Springs; its presence may provide some additional level of protection to Chiricahua leopard frog. The future land management plans of the landowners are unknown.

Unit 38: Cuchillo Negro Warm Springs and Creek

This unit consists of 3 ac (1 ha) of Bureau of Land Management, 3 ac (1 ha) of New Mexico State, and 23 ac (9 ha) of private lands in Sierra County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

Two springs on Bureau of Land Management land are the source of a mostly perennial stream flow that runs for about 6.0 mi (9.6 km) down Cuchillo Negro Creek; however, the Chiricahua leopard frogs are rarely found more than 1.2 mi (2.0 km) downstream of the warm springs (Christman 2006a, p. 8). The proposed critical habitat begins at the upper of the two springs and follows Cuchillo Negro Creek downstream to the confluence with an unnamed drainage that comes in from the south, for an approximate stream distance of 1.58 mi (2.54 km).

Chytridiomycosis is present in this population, and it is likely that frogs persist where the water is warm, but succumb to the disease in the cooler waters downstream. Chiricahua leopard frogs currently persist in very low numbers in this unit.

PCE 1 is present in this unit; however, this site is too far from other Chiricahua leopard frog populations to be considered part of a metapopulation. The nearest population is in Unit 36, about 12.7 mi (20.3 km) to the south-southwest. Hence, this population is managed as an isolated population.

Chiricahua leopard frogs coexist with plains leopard frogs at this site; and it is likely the plains leopard frogs occasionally prey upon Chiricahua leopard frog tadpoles and small frogs. Bullfrogs have been recorded in Cuchillo Negro Creek, but only rarely, and apparently do not breed or persist in the reach with the leopard frogs (Christman 2006a, p. 9).

The primary threats in this unit are periodic cleaning out of the channel by the Cuchillo Acequia Association, seasonal flooding that eliminates tadpoles and fills in pools, and chytridiomycosis. The springs located on Bureau of Land Management land are the source of downstream irrigation water, and the Cuchillo Acequia Association has maintained two trenches through the springs reportedly to improve flow. Channel work in 2001 resulted in extensive damage to the springs, stream, and riparian vegetation (67 FR 40802; June 13, 2002).

The private landowner downstream of the springs is the Ladder Ranch, and as described in the Unit 36 description above, the ranch is an active participant in Chiricahua leopard frog recovery. Under section 4(b)(2) of the Act, the private lands in Unit 38 are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Unit 39: Ash and Bolton Springs

This unit consists of 49 ac (20 ha) of private lands east of Hurley in Grant County, New Mexico. This unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

Included in the critical habitat proposal are Ash Spring and a spring in Bolton Canyon locally known as Bolton Springs. Also included are ephemeral or intermittent drainages and uplands needed for movement of frogs among these two breeding sites as follows: (1) From the spring box at Ash Spring downstream in a drainage to a dirt road crossing; and (2) west and overland from the ruins of an old house below Ash Spring to a low saddle, then downslope into an unnamed drainage, and downstream in that drainage to its confluence with another unnamed drainage, downstream in that unnamed drainage its confluence with another unnamed drainage, then upstream in that unnamed drainage to the top of that drainage and directly downslope and west to another unnamed drainage, downstream in that unnamed drainage to its confluence with Bolton Canyon, and upstream in Bolton Canyon to the locally known Bolton Springs.

Populations at Ash and Bolton Springs were present at the time of listing and currently still exist. PCEs 1 and 2 are present in this unit. These sites were once part of a metapopulation, but recent extirpations have left only these two populations. There may be potential in the future to rebuild a metapopulation through natural recolonization or population reestablishments, if threats can be managed.

The lands are owned by Freeport-McMoRan Copper and Gold Subsidiaries as part of the Chino Copper Mine, which is based in nearby Santa Rita and Hurley. In December 2008, Freeport-McMoRan announced plans to suspend mining and milling activities at Chino. The majority of the work force was laid off in 2009. To our knowledge, no current plans exist to expand the mine into the area proposed for critical habitat, and Freeport-McMoRan and its predecessor, Phelps-Dodge, have been cooperative in conservation of the Chiricahua leopard frog.

Chytridiomycosis is probably the key threat in this unit; this region has experienced die-offs and extirpations associated with chytridiomycosis. Large

numbers of dead frogs were found at Ash Spring in 2007; however, the frogs at Bolton Springs have shown no signs of disease. Both populations exist in small aquatic sites that cannot sustain large populations; hence they are also vulnerable to variations in environmental conditions and population demographics.

Unit 40: Mimbres River

This unit consists of 1,097 ac (444 ha) of private lands in Grant County, New Mexico. The unit is proposed as critical habitat because it was occupied at the time of listing and currently contains sufficient PCEs to support life-history functions essential for the conservation of the species.

The unit is divided into two disjunct reaches of the Mimbres River that are separated by a 6.6-mi (10.6-km), intermittent reach. PCE 1 is present; however, the two reaches may be too far apart to reasonably expect frogs to move between the two sites, and the next nearest Chiricahua leopard frog population is at Ash Spring in Unit 39, over 10 mi (16 km) away from the lower Mimbres River reach across rugged terrain.

Proposed critical habitat in the upper Mimbres River includes an approximate 2.42-mi (3.89-km) reach that begins where the river flows into The Nature Conservancy's property and continues downstream to the confluence with Bear Canyon. The approximate 5.82-mi (9.36-km) proposed lower critical habitat reach begins at the bridge over the Mimbres River just west of San Lorenzo and continues downstream to where it exits the The Nature Conservancy's Disert parcel near Faywood. The two proposed critical habitat reaches are largely perennial, although portions of the river dry out during drought. Frogs are currently present in both reaches of the Mimbres River.

The best breeding site in the upper reach is at Moreno Spring, which harbors a robust population of Chiricahua leopard frogs. In the upper reach, frogs are also observed and breed in the river itself and at ponds at Emory Oak Ranch. Breeding occurs in the lower river reach as well, where a robust population is present near San Juan.

Chytridiomycosis is present in this unit; however, frogs are persisting with the disease. Moreno Spring is a warm spring that likely provides some buffer against the effects of the chytridiomycosis. Other threats include agricultural and rural development, water diversions, groundwater pumping, and leveeing and bankline work to protect properties from flooding. Periodic high flows probably wash some tadpoles out of the system and fill in pools used for breeding. No bullfrogs or crayfish have ever been found in this unit; although if introduced, they could pose a significant threat.

The threatened Chihuahua chub (*Gila nigrescens*) occurs in the upper reach, and introduced rainbow trout occur throughout the areas where there is water. Both trout and chub likely prey upon Chiricahua leopard frog tadpoles. Bear Canyon Reservoir in Bear Canyon near the town of Mimbres reportedly supports populations of channel catfish (*Ictalurus punctatus*), black crappie (*Pomoxis nigromaculatus*), largemouth bass, and bluegill (*Lepomis macrochirus*), plus winter stocked rainbow trout (Johnson and Smorynski 1998, p. 132). These species may spill periodically into the Mimbres River from the reservoir, adding additional nonnative predators to the river.

Presence of the Chihuahua chub and protections afforded by the Act may provide some level of protection to the upper reach. In addition, The Nature Conservancy owns the majority of the river in the upper reach (not including Moreno Spring or Emory Oak Ranch) and significant parcels in the lower reach. These lands, known as The Mimbres River Preseve, are managed for the benefit of the Chihuahua chub, Chiricahua leopard frog, and other riparian and aquatic resources. Under section 4(b)(2) of the Act, private lands owned by The Nature Conservancy in this unit are being considered for exclusion from the final rule for critical habitat (*see Application of Section 4(b)(2) of the Act* section below).

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they authorize, fund, or carry out are not likely to destroy or adversely modify critical habitat. Decisions by the Fifth and Ninth Circuit Courts of Appeal have invalidated our definition of "destruction or adverse modification" (50 CFR 402.02) (*see Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.,* 245 F.3d 434, 442 (5th Cir. 2001), and as a result, we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain those PCEs that relate to the ability of the area to periodically support the species) to serve its intended conservation role for the species.

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the 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. As a result of this consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A letter of concurrence with determination by a Federal agency that their actions may affect, but are not likely to adversely affect, listed species or critical habitat; or

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

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify 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,
- Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,
- Are economically and technologically feasible, and
- Would, in the Director's opinion, avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying 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 we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has

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

Federal activities that may affect the Chiricahua leopard frog or its critical habitat require section 7 consultation under the Act. Activities on State, Tribal, local, or private lands requiring a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from us under section 10 of the Act) or involving some other Federal action (such as funding from the Natural Resource Conservation Service, Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency) are subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local or private lands that are not federally authorized, funded, or permitted do not require section 7 consultations.

Application of the "Adverse Modification" Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species, or retain those PCEs that relate to the ability of the area to periodically or regularly support the species. Activities that may destroy or adversely modify critical habitat are those that alter the PCEs to an extent that appreciably reduces the conservation value of critical habitat for the Chiricahua leopard frog. As discussed above, the role of critical habitat is to support the life-history needs of the species and provide for the conservation of the species as breeding habitat or as movement corridors among breeding sites in a metapopulation.

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

Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and therefore should result in consultation for the Chiricahua leopard frog include, but are not limited to:

(1) Actions that would significantly increase sediment deposition or scouring within the stream channel or pond that acts as a breeding site or a movement corridor among breeding sites in a metapopulation. Such activities could include, but are not limited to: Excessive sedimentation from livestock overgrazing; road construction; commercial or urban development; channel alteration; timber harvest; prescribed fires; off-road vehicle or recreational use; and other alterations of watersheds and floodplains. These activities could adversely affect the potential for frogs to survive or breed at a breeding site, and reduce the likelihood that frogs could move among subpopulations in a metapopulation, which in turn would decrease the viability of the metapopulation and its component local populations.

(2) Actions that would alter water chemistry beyond the tolerance limits of the Chiricahua leopard frog (*see* discussion above, "Aquatic Breeding Habitat and Immediately Adjacent Uplands"). Such activities could include, but are not limited to: Release of chemicals, biological pollutants, or effluents into the surface water or into connected groundwater at a point source or by dispersed release (non-point source); livestock grazing that results in waters heavily polluted by feces; runoff from agricultural fields; roadside use of salts; aerial persticide overspray; runoff from mine tailings or other mining activities; and ash flow and fire retardants from fires and fire suppression. These actions could adversely affect the ability of the habitat to support survival and reproduction of Chiricahua leopard frogs at breeding sites. Variances in water chemistry or temperature could also affect the frog's ability to survive with chytridiomycosis.

(3) Actions that would alter the water quantity or permanence of a breeding site or dispersal corridor. If the permanence of an aquatic system declines so that it regularly dries up for more than a month each year, it will lose its ability to support breeding Chiricahua leopard frogs. If the quantity of water declines, it may reduce the likelihood that the site will support a population of frogs that is robust enough to be viable over time. Similarly, ephemeral, intermittent, or perennial ponds can be important stop-over points for frogs moving among breeding sites in a metapopulation. Reducing the permanence of these sites may reduce their ability to facilitate frog movements. However, in some cases, increasing permanence can be detrimental as well, in that it could create favorable habitat for predatory fishes, bullfrogs, or crayfish that otherwise could not exist in the system. Such activities that could cause these effects include, but are not limited to, water diversions, groundwater pumping, watershed degredation, construction or destruction of dams or impoundments, developments or 'improvements' at a spring, channelization, dredging, road and bridge construction, and destruction of riparian or wetland vegetation.

(4) Actions that would directly or indirectly result in introduction of nonnative predators, increase the abundance of extant predators, or introduce disease, particularly chytridiomycosis. Possible actions could include, but are not limited to: Introduction or stocking of fishes, bullfrogs, crayfish, tiger salamanders or other predators on the Chiricahua leopard frog; creating or sustaining a sport fishery that encourages use of live fish, crayfish, tiger salamanders, or frogs as bait; water diversions, canals, or other water conveyance that moves water from one place to another and through which inadvertent transport of predators into Chiricahua leopard frog habitat may occur; and movement of water, mud, wet equipment, or vehicles from one aquatic site to another, through which inadvertent transport of may occur.

(5) Actions and structures that would physically block movement among breeding sites in a metapopulation. Such actions and structures include, but are not limited to: Urban, industrial, or agricultural development; reservoirs stocked with predatory fishes, bullfrogs, or crayfish that are 50 ac (20 ha) or more in size; highways that do not include frog fencing and culverts; and walls, dams, fences, canals, or other structures that physically block movement. These actions and structures could reduce or eliminate immigration and emigration among breeding sites in a metapopulation, reducing the viability of the metapopulation and its subpopulations.

(6) Actions that would remove or block access to riparian vegetation and banklines within 20 ft (6.1 m) of the high water line of breeding ponds or to the upland edge of the wetland and riparian vegetation community lining breeding sites, whichever is greatest, or that would reduce vegetation in movement corridors among breeding sites in a metapopulation. Such activities could include, but are not

limited to: Clearing of riparian or wetland vegetation; saltcedar (*Tamarix* sp.) control; road, bridge, or canal construction; urban development; conversion of river bottomlands to agriculture; stream or drainage channelization; and levee or dike construction. In some cases, thinning of very dense vegetation, such as cattails, which can completely take over an aquatic site, can be beneficial to the frog and its habitat. However, in most cases, vegetation clearing or removal, or blocking access to uplands adjacent to breeding sites, will reduce the quality of foraging and basking habitat, and may increase the likelihood of successful predation because cover has been removed.

We note that the above activities may adversely affect critical habitat. As stated previously, an activity adversely affecting critical habitat must be of a severity or intensity that the PCEs are compromised to the extent that the critical habitat can no longer meet its intended conservation function before a destruction or adverse modification determination is reached. Within the context of the goals and purposes of the recovery strategy in the species' recovery plan, an activity that compromises the PCEs to the point that one or more of the recovery criteria could not be achieved or would be very difficult to achieve in one or more recovery units would deteriorate the value of critical habitat to the point that its conservation function could not be met.

Exemptions

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

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

- 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.

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

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

There are no Department of Defense lands within the proposed critical habitat designation; thus we are not exempting any lands from critical habitat under section 4(a)(3)(B)(i) of the Act.

Exclusions

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

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

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we must identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and determine whether the benefits of exclusion outweigh the benefits of inclusion. If based on this analysis, we make this determination, then we can exclude the area only if such exclusion would not result in the extinction of the species.

When considering the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus; the educational benefits of mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When considering the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation, strengthening, or encouragement of partnerships; implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide; or a combination of these.

In the case of the Chiricahua leopard frog, the benefits of critical habitat include public awareness of Chiricahua leopard frog presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for Chiricahua leopard frogs due to the protection from adverse modification or destruction of critical habitat.

The consultation provisions under section 7(a) of the Act constitute the regulatory benefits of critical habitat. Federal agencies must consult with us on discretionary actions that may affect critical habitat and must avoid destroying or adversely modifying critical habitat. Federal agencies must also consult with the Service on discretionary actions that may affect a listed species and refrain from undertaking actions that are likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. Therefore, the difference in outcomes of these two analyses represents the regulatory benefit of critical habitat. For some species, and in some locations, the outcome of these analyses will be similar, because effects on habitat will often result in effects on the species. However, the regulatory standard is different. The jeopardy analysis looks at the action's impact on survival and recovery of the species, while the adverse modification analysis examines the action's effects on the

designated habitat's contribution to the species' conservation. This will, in many instances, lead to different results and different regulatory requirements. Thus, critical habitat designations may provide greater regulatory benefits to the recovery of a species.

There are two limitations to the regulatory effect of critical habitat. First, a section 7(a)(2) consultation is required only where there is a Federal nexus (an action authorized, funded, or carried out by any Federal agency). If there is no Federal nexus, the critical habitat designation of non-Federal lands itself does not restrict any actions that destroy or adversely modify critical habitat. However, this does not apply in situations where non-Federal lands have a Federal nexus (*e.g.,* a private project on non-Federal lands that requires the issuance of a permit from a Federal agency). Second, the designation only limits destruction or adverse modification. Critical habitat designation alone does not require property owners to undertake affirmative actions to promote the recovery of the species.

The designation of critical habitat does not require that any management or recovery actions take place on the lands included in the designation. Even in cases where consultation has been initiated under section 7(a)(2) of the Act, the end result of consultation is to avoid jeopardy to the species or adverse modification of its critical habitat or both, but not necessarily to manage critical habitat or institute recovery actions on critical habitat. Conversely, voluntary conservation efforts implemented through management plans may institute proactive actions over the lands they encompass and are often put in place to remove or reduce known threats to a species or its habitat, therefore implementing recovery actions.

Another benefit of including lands in critical habitat is that serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the affected species. For example, critical habitat designation can help inform State agencies and local governments about areas that could be conserved under State laws or local ordinances.

Most federally listed species in the United States will not recover without the cooperation of non-Federal landowners. More than 60 percent of the United States is privately owned (National Wilderness Institute 1995, p. 2), and at least 80 percent of endangered or threatened species occur either partially or solely on private lands (Crouse *et al.* 2002, p. 720). Stein *et al.* (1995, p. 400) found that only about 12 percent of listed species were found almost exclusively on Federal lands (90 to 100 percent of their known occurrences restricted to Federal lands) and that 50 percent of federally listed species are not known to occur on Federal lands at all.

The majority of Chiricahua leopard frog habitat and localities are on Federal lands, mostly lands managed by the U.S. Forest Service; however, key aquatic sites are sometimes on non-Federal lands. This is particularly true for New Mexico, where of the 11 proposed critical habitat units in that State, 4 are entirely non-Federal lands and the other 7 contain lands owned by non-Federal entities.

Building partnerships and promoting voluntary cooperation of landowners are essential to understanding the status of species on non-Federal lands, and necessary for implementing recovery actions, such as reestablishing listed species and restoring and protecting habitat. Many non-Federal landowners derive satisfaction from contributing to endangered species recovery. We strive to promote these private-sector efforts through the Department of the Interior's Cooperative Conservation philosophy. Conservation agreements with non-Federal landowners (HCPs, Safe Harbor Agreements, other conservation agreements, easements, and State and local regulations) enhance species conservation by extending species protections beyond those available through section 7(a)(2) consultations. In the past decade and a half, we have encouraged non-Federal landowners to enter into conservation agreements, based on our philosophy that voluntary conservation can benefit both landowners and wildlife, and that we can achieve greater species conservation on non-Federal land through such partnerships than we can through regulatory methods (61 FR 63854; December 2, 1996). For the Chiricahua leopard frog, we have often used the Service's Partners for Fish and Wildlife grant program to work with non-Federal partners on recovery projects for this species. This grant program requires a commitment from the participating landowner to maintain the improvements funded by the program for 10 years. We have also worked with private landowners on Chiricahua leopard frog conservation via Safe Harbor Agreements in Arizona and southwestern New Mexico, a conservation agreement for the Ramsey Canyon (=Chiricahua) leopard frog that protects frogs and their habitats on private and public lands in the Huachuca Mountains of Arizona, and HCPs in southeastern Arizona and southwestern New Mexico.

Many private landowners, however, are wary of the possible consequences of attracting or maintaining endangered species to their property. Mounting evidence suggests that some regulatory actions by the Federal government, while well-intentioned and required by law, can (under certain circumstances) have unintended negative consequences for the conservation of species on private lands (Wilcove *et al.* 1996, pp. 5–6; Bean 2002, pp. 2–3; Conner and Mathews 2002, pp. 1–2; James 2002, pp. 270–271; Koch 2002, pp. 2–3; Brooke *et al.* 2003, pp. 1639–1643). Many landowners fear a decline in their property value due to real or perceived restrictions on land-use options where threatened or endangered species are found. Consequently, harboring endangered species is viewed by many landowners as a liability. This perception results in anti-conservation incentives, because maintaining habitats that harbor endangered species represents a risk to future economic opportunities (Main *et al.* 1999, pp. 1264–1265; Brook *et al.* 2003, pp. 1644–1648).

According to some researchers, the designation of critical habitat on private lands significantly reduces the likelihood that landowners will support and carry out conservation actions (Main *et al.* 1999, p. 1263; Bean 2002, p. 2; Brook *et al.* 2003, pp. 1644–1648). The magnitude of this outcome is greatly amplified in situations where active management measures (such as reestablishment, fire management, control of invasive species) are necessary for species conservation (Bean 2002, pp. 3–4). Such is the case for the Chiricahua leopard frog. We believe that the judicious exclusion of specific areas of non-federally owned lands from critical habitat designations can contribute to the species' recovery and provide a superior level of conservation.

The purpose of designating critical habitat is to contribute to the conservation of endangered and threatened species and the ecosystems upon which they depend. The outcome of the designation, triggering regulatory requirements for actions authorized, funded, or carried out by Federal agencies under section 7(a)(2) of the Act, can sometimes be counterproductive to its intended purpose on non-Federal lands. Thus, the benefits of excluding areas that are covered by effective partnerships or

other conservation commitments can often be high.

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

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

Exclusions Based on Economic Impacts

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

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

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense (DOD) where a national security impact might exist. In preparing this proposal, we have determined that the lands within the proposed designation of critical habitat for the Chiricahua leopard frog are not owned or managed by DOD, and we therefore anticipate no impact to national security. We are not considering any areas for exclusion based on impacts to national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts to national security. We consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

Habitat Conservation Plans

We consider a current plan (HCPs as well as other types) to provide adequate management or protection if it meets the following criteria:

(1) The plan is complete and provides the same or better level of protection from adverse modification or destruction than that provided through a consultation under section 7 of the Act;

(2) There is a reasonable expectation that the conservation management strategies and actions will be implemented for the foreseeable future, based on past practices, written guidance, or regulations; and

(3) The plan provides conservation strategies and measures consistent with currently accepted principles of conservation biology.

We are requesting comments on the benefit to the Chiricahua leopard frog from the Malpai Borderlands HCP, Malpai Borderlands Safe Harbor Agreement, and the AGFD Safe Harbor Agreement.

Malpai Borderlands HCP

The proposed critical habitat units covered by this completed HCP that addresses the Chiricahua leopard frog are Unit 16 (Peloncillo Mountains Tanks) and Unit 19 (Rosewood and North Tanks). Both critical habitat units are in recovery unit 3. The Malpai Borderlands HCP is an umbrella document under which individual landowners may participate. If a landowner seeks assistance from the Malpai Borderlands Group for a project covered by the HCP, then the conservation measures from the HCP become stipulations for that project. To date, the private landowners in Units 16 and 19 have not conducted Malpai-assisted projects; thus the conservation measures from the HCP have not yet been implemented or realized on those lands.

Malpai Borderlands Safe Harbor Agreement and the AGFD Safe Harbor Agreement

Two umbrella Safe Harbor Agreements under which individual landowners can enroll their lands by signing a Certificate of Inclusion have been completed for Arizona and southwestern New Mexico. Under the Certificates of Inclusion, landowners commit to certain conservation actions. These agreements have, in some cases, facilitated habitat improvements and translocations of Chiricahua leopard frogs to private lands to establish new populations. Under section 4(b)(2) of the Act, we will assess the appropriateness of exclusions from critical habitat for non-Federal lands in proposed critical habitat units that are enrolled under either the AGFD Safe Harbor Agreement or the Malpai Borderlands Safe Harbor Agreement. We will also consider exclusions for non-Federal lands that are protected by conservation easements, conservation agreements, or other forms of protective management that benefit the Chiricahua leopard frog and its habitats. Specific units for which we are considering exclusions from critical habitat designation are discussed and described below.

Unit 10 (Pasture 9 Tank). The landowner signed a Certificate of Inclusion under the AGFD's Safe Harbor Agreement and allowed us to establish a population of Chiricahua leopard frogs at this site. With financial assistance from the Service's Partners for Wildlife Program, Pasture 9 Tank has been equipped with a solar-powered well that provides a dependable water source for the frogs, and the site is enclosed with bullfrog exclusion fencing. The landowner also has a conservation easement on the ranch and is nearing completion of an HCP, and although that HCP does not specifically address the Chiricahua leopard frog, commitments in the HCP would benefit Chiricahua leopard frog conservation. The conservation easement limits development and guarantees that the ranch will remain in perpetuity as open space. All lands in Unit 10 (0.5 ac (0.2 ha)) will be considered for exclusion.

Unit 12 (Beatty's Guest Ranch). This unit is entirely privately owned. The

landowner signed onto the AGFD Safe Harbor Agreement with a Certificate of Inclusion, and is also a signatory to the Ramsey Canyon Leopard Frog Conservation Agreement, which was developed prior to that species being recognized as the Chiricahua leopard frog. That conservation agreement is still in place and implements the Chiricahua leopard frog recovery plan on the eastern slopes of the Huachuca Mountains. The landowner allowed Chiricahua leopard frogs to be introduced to the property, and the Beatty family actively manages for the frogs and is an enthusiastic participant in the recovery program. All lands in Unit 12 (10 ac (4.0 ha)) will be considered for exclusion.

Unit 14 (Ramsey and Brown Canyons). All lands owned by The Nature Conservancy in Ramsey Canyon (16 ac (6 ha)) of Unit 14 will be considered for exclusion. The Nature Conservancy is a signatory to the Ramsey Canyon Leopard Frog Conservation Agreement and has submitted a Certificate of Inclusion for the AGFD's Safe Harbor Agreement. The Nature Conservancy has been an active participant in leopard frog conservation since conservation work began on the Chiricahua leopard frog in 1993. With assistance from the Service's Partners for Fish and Wildlife Program, The Nature Conservancy has removed anthropogenic structures that interfered with channel morphology and restored the 'Trout Pond' for Chiricahua leopard frogs. They also monitor the frogs, developed the Meadow Ponds where the frogs breed, and have allowed numerous augmentations and introductions of leopard frogs to their Ramsey Canyon property. The property is managed as the Ramsey Canyon Preserve. The Conservancy is dedicated to the preservation of the canyon's biodiversity, including the Chiricahua leopard frog.

Unit 16 (Peloncillo Mountains Tanks). The private lands in this unit (289 ac (117 ha)) are located on the Canoncito Ranch, a part of the Diamond A Ranch. All of those private lands will be considered for exclusion from critical habitat designation. The ranch is covered by a conservation easement that limits development and ensures that the ranch will be maintained in open space in perpetuity and with the capability to support a diverse array of wildlife and plants. If the landowner seeks assistance from Malpai Borderlands Group for projects covered by the Malpai Borderlands HCP, certain conservation measures will be required; however, to date the landowner has not elected to participate in the HCP. The owner has also enrolled lands in the unit in the Malpai Borderlands Safe Harbor Agreement with a Certificate of Inclusion and is further working with Sky Island Alliance on a restoration project of the Cloverdale Cienega, which will improve habitats for the Chiricahua leopard frog.

Unit 17 (Cave Creek). Private lands in this unit are owned by the American Museum of Natural History in New York and managed as the Southwest Research Station. The property is a year-round field station for biologists, geologists, and anthropologists interested in studying the diverse environments and biotas of the Chiricahua Mountains and surrounding areas in southeastern Arizona. The property serves as an outdoor classroom for students and researchers. The Southwest Research Station has signed onto the AGFD's Safe Harbor Agreement with a Certificate of Inclusion and, with assistance from the Service's Partners for Fish and Wildlife Program, has developed indoor and outdoor captive propagation and headstarting facilities for the Chiricahua leopard frog. Under a section 10(a)(1)(A) enhancement of survival permit from the Service, the facilities house Chiricahua leopard frogs from proposed Unit 18 (Leslie Creek) with the objective of producing frogs for release at a pond on the station's grounds, to augment the population in proposed Unit 18, and to provide stock for additional population establishments in recovery unit 3. The Southwest Research Station is an enthusiastic partner in recovery of the Chiricahua leopard frog. All lands in Unit 17 owned by the Southwest Research Station (92 ac (37 ha)) will be considered for exclusion.

Unit 19 (Rosewood and North Tanks). This unit consists of private and State-leased lands on the Magoffin Ranch. The owners of the Magoffin Ranch have enrolled these lands with a Certificate of Inclusion into the Malpai Borderlands Safe Harbor Agreement and have been an active participant in Chiricahua leopard frog conservation for more than 15 years. They expended much time and labor to haul water to and maintain aquatic habitat at Rosewood Tank during a severe drought in the 1990s. They then constructed two concrete refugia adjacent to the tank that are fed by a well. The refugia maintain Chiricahua leopard frogs at the site even when the tank dries out completely. Chiricahua leopard frogs would have been extirpated from the site without these actions. They also allowed and participated in the establishment of a new population of Chiricahua leopard frogs at North Tank in 2008. Although most of the lands in this unit are owned by the Arizona State Land Department (78 ac (31 ha) versus 19 ac (8 ha) of private lands), all the lands in the unit are enrolled in the Safe Harbor Agreement and the Magoffin Ranch leases the State land for grazing and manages and maintains Rosewood and North Tanks. If the landowner seeks assistance from Malpai Borderlands Group for projects covered by the Malpai Borderlands HCP, certain conservation measures will be required; however, to date the landowner has not elected to participate in the HCP. All lands in Unit 19 (97 ac (39 ha)) will be considered for exclusion.

Unit 36 (Seco Creek). This unit lies almost entirely within the privately owned Ladder Ranch. The very upper end of Seco Creek is on the Gila National Forest; only the private lands (610 ac (247 ha)) will be considered for exclusion. The 156,439-acre Ladder Ranch is owned by Turner Enterprises and is managed for its biodiversity. The Ladder Ranch has been an active participant in the conservation of a number of rare and listed species, including the Mexican wolf (*Canis lupus baileyi*), Bolson tortoise (*Gopherus flavomarginatus*), Chiricahua leopard frog, black-tailed prairie dog (*Cynomys ludovicianus*), American bison (*Bison bison*), and Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*). The strongest metapopulation of Chiricahua leopard frogs in New Mexico exists in Unit 36 in part due to the diligent management of the Ladder Ranch, which has included fencing some of the ranch's waters from the bison that graze the area, reestablishment of populations using wild-to-wild translocations, maintenance of wells and tanks, and controlling bullfrogs. The Ladder Ranch also monitors the frogs and habitats, and has recently initiated a captive breeding facility and program to rear frogs for population augmentation and reestablishment. The Service has provided funding for the captive breeding program under the Partners for Fish and Wildlife Program and other granting authorities. The Ladder Ranch maintains captive propagation facilities for the Chiricahua leopard frog under a section 10(a)(1)(A) enhancement of survival permit from the Service. Research on movements of Chiricahua leopard frogs using radiotelemetry has been funded by the Ladder Ranch and carried out in the Seco Creek area, and during the development of the recovery plan, Turner Endangered Species Fund paid for part of the Population and Habitat Viability Analysis (Service 2007, Appendix C, pp. C–1 to C–40).

Unit 38 (Cuchillo Negro Warm Springs and Creek). The private lands in Unit 38, which are part of the Ladder Ranch (23 ac (9 ha)), will be considered for exclusion based on the same rationale presented for Unit 36.

Unit 40 (Mimbres River). Private lands owned by The Nature Conservancy are managed as the Mimbres River Preserve. These lands are managed for the benefit of the Chihuahua chub, Chiricahua leopard frog, and other riparian and aquatic resources. All of The Nature Conservancy's lands in Unit 40 (510 ac (206 ha)) will be considered for exclusion.

Table 3 below provides approximate areas (1,647 ac (667 ha)) of lands that meet the definition of critical habitat but for which the Service is considering possible exclusions under section 4(b)(2) of the Act from the final critical habitat rule. Table 3 also provides our reasons for the exemptions and proposed exclusions.

TABLE 3—EXEMPTIONS AND AREAS CONSIDERED FOR EXCLUSION BY CRITICAL HABITAT UNIT

Unit	Specific area to be considered for exclusion	Section of the act that is the basis for possible exclusion or exemption	Area meeting the definition of critical habitat in the unit (acres (hectares))	Possible exclusion in acres (hectares)
10	Pasture 9 Tank	4(b)(2)	0.5 (0.2)	0.5 (0.2)
12	Beatty's Guest Ranch	4(b)(2)	10 (4)	10 (4)
14	Ramsey Canyon Preserve	4(b)(2)	123 (50)	16 (6)
16	Canoncito Ranch	4(b)(2)	655 (265)	289 (117)
17	Southwest Research Station	4(b)(2)	326 (132)	92 (37)
19	Magoffin Ranch	4(b)(2)	97 (39)	97 (39)
36	Ladder Ranch	4(b)(2)	676 (273)	610 (247)
38	Ladder Ranch	4(b)(2)	28 (12)	23 (9)
40	Mimbres River Preserve	4(b)(2)	1,097 (444)	510 (206)
Totals			3,013 (1,219)	1,648 (665)

Peer Review

In accordance with our joint policy published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We will send copies of this proposed rule to these peer reviewers immediately following publication in the **Federal Register**. We will invite these peer reviewers to comment during the public comment period on our specific assumptions and conclusions concerning the taxonomic revision of the Chiricahua leopard frog, our assessment of threats to the currently described species *Lithobates chiricahuensis,* our proposal of listing as threatened the currently described species, and our proposed designation of critical habitat.

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

Public Hearings

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the **Federal Register** (*see* the **DATES** section above). Such requests must be sent to the address shown in the **FOR FURTHER INFORMATION CONTACT** section. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing. A draft economic analysis and draft environmental assessment for this action will be prepared and made available to the public for review. At that time, we will reopen the comment period on this proposed rule and concurrently solicit comments on the draft economic analysis and draft environmental assessment. If determined necessary, in the **Federal Register** notice reopening the comment period, we will announce public hearing(s) during that comment period for the public to present oral and written comment on all three documents.

Special Rule Under Section 4(d) of the Act

The June 13, 2002, final rule (67 FR 40790) listing the Chiricahua leopard frog as threatened included a special rule as defined under section 4(d) of the Act to ease the general take prohibitions for livestock use at or maintenance activities of livestock tanks located on private, State, or Tribal lands (*see* 50 CFR 17.43(b)). Under section 4(d) of the Act, the Secretary may publish a special rule that modifies the standard protections for threatened species in the Service's regulations at 50 CFR 17.31, which implement section 9 of the Act, with special measures that are determined to be necessary and advisable to provide for the conservation of the species. Based on changes made to the listed entity, we reevaluated the existing 4(d) rule to *see* if its measures are still necessary and advisable to the conservation of the species and appropriate to apply in the expanded range of the species. We determined that the measures of the 4(d) rule are appropriate and should be applied to the whole range. Therefore, we are not changing any conditions of the June 13, 2002, special rule, and it shall remain in effect as identified in our regulations at 50 CFR 17.43(b).

The special rule replaces the Act's general prohibitions against take of the Chiricahua leopard frog with special measures tailored to the conservation of the species on all non-Federal lands. Through the maintenance and operation of the stock tanks for cattle, habitat is provided for the leopard frogs, hence there is a conservation benefit to the species. Under the special rule, take of Chiricahua leopard frog caused by livestock use of or maintenance activities at livestock tanks located on private, State, or Tribal lands would be exempt from section 9 of the Act. A livestock tank is defined as an existing or future impoundment in an ephemeral drainage or upland site constructed primarily as a watering site for livestock. The rule targets tanks on

private, State, and Tribal lands to encourage landowners and ranchers to continue to maintain these tanks as they provide habitat for the frogs. Livestock use and maintenance of tanks on Federal lands will be addressed through the section 7 process. When a Federal action, such as permitting livestock grazing on Federal lands, may affect a listed species, consultation between us and the action agency is required pursuant to section 7 of the Act. The conclusion of consultation may include mandatory changes in livestock programs in the form of measures to minimize take of a listed animal or to avoid jeopardizing the continued existence of a listed species. Changes in a proposed action resulting from consultations are almost always minor.

Required Determinations

Regulatory Planning and Review—Executive Order 12866

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

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

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

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

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

At this time, we lack the available economic information necessary to determine whether the revised rule would have an annual effect on the economy of $100 million or more or affect the economy in a material way. To determine the economic consequences of designating the specific area as critical habitat, we are preparing a draft economic analysis of this proposed action, which will be available for public comment. This economic analysis also will be used to determine compliance with E.O. 12866, the Regulatory Flexibility Act, the Small Business Regulatory Enforcement Fairness Act, E.O. 12630, and E.O. 13211.

Further, E.O. 12866 directs Federal agencies promulgating regulations to evaluate regulatory alternatives (OMB Circular A–4, September 17, 2003). Under Circular A–4, once an agency determines that the Federal regulatory action is appropriate, the agency must consider alternative regulatory approaches. Because the determination of critical habitat is a statutory requirement under the Act, we must evaluate alternative regulatory approaches, where feasible, when promulgating a designation of critical habitat.

In developing our designations of critical habitat, we consider economic impacts, impacts to national security, and other relevant impacts under section 4(b)(2) of the Act. Based on the discretion allowable under this provision, we may exclude any particular area from the designation of critical habitat providing that the benefits of such exclusion outweigh the benefits of specifying the area as critical habitat and that such exclusion would not result in the extinction of the species. As such, we believe that the evaluation of the inclusion or exclusion of particular areas, or a combination of both, constitutes our regulatory alternative analysis for designations.

We will announce the availability of the draft economic analysis and draft environmental assessment in the **Federal Register** and in local newspapers to ensure that they are available for public review and comments. These documents will also be available on the Internet at *http://www.regulations.gov.*

Regulatory Flexibility Act

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

At this time, we lack the available economic information necessary to provide an adequate factual basis for the required RFA finding. Therefore, we defer the RFA finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act and E.O. 12866. This draft economic analysis will provide the required factual basis for the RFA finding. Upon completion of the draft economic analysis, we will announce availability of that analysis of the proposed designation in the **Federal Register** and reopen the public comment period for the proposed designation. We will include with this announcement, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination.

As discussed above, designation of critical habitat will require Federal agencies to consult with the Service on activities that may affect critical habitat. If the site is occupied by Chiricahua leopard frogs, consultation would likely be triggered by the presence of the frog, regardless of critical habitat. From Table 1, only 2 of the 40 sites proposed are currently unoccupied; however, this number is somewhat misleading in that, within individual units, there are often ponds or stream segments of critical habitat units that are occupied while others are not (*see* descriptions in Proposed Critical Habitat Designation). Within occupied units, there are sometimes aquatic sites that are unoccupied (while other aquatic sites have frogs). As a result, we expect more consultations on Federal actions than occur with just the listing of the frog without critical habitat. These consultations could incur project delays (consultations run 135 days from the date of initiation of consultation to the issuance of a biological opinion (50 CFR 402.14(e)), and can be extended), and conservation measures developed during consultation, as well as mandatory reasonable and prudent alternatives, could cause additional project costs or alter the scope, timing, location, or duration of a project. Federal actions likely to incur these delays, additional costs, or limitations include issuance of livestock grazing permits, road construction, fuel reduction projects, prescribed fire, transmission lines, fiber optic lines, recreational developments or use, and other Federal actions common to Federal land management. Projects on non-Federal lands would be similarly affected if they are funded, authorized, or carried out by a Federal agency. We have concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that we make a

sufficiently informed determination based on adequate economic information and provide the necessary opportunity for public comment.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This rule would not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)-(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or [T]ribal 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 [T]ribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or Tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. 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 lack the available economic information to determine if a Small Government Agency Plan is required. Therefore, we defer this finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act.

Takings

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we will analyze the potential takings implications of designating critical habitat for the Chiricahua leopard frog in a takings implications assessment. Following completion of the proposed rule, a draft economic analysis will be completed for the proposed designation. The draft economic analysis will provide the foundation for us to use in preparing a takings implications assessment.

Federalism

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed critical habitat designation with appropriate State resource agencies in Arizona and New Mexico. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the PCEs of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally-sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

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

Civil Justice Reform

In accordance with E.O. 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed designating critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the PCEs within the designated areas to assist the public in understanding the habitat needs of the Chiricahua leopard frog.

Paperwork Reduction Act of 1995

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule would 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 jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses as defined by NEPA (42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).] However, when the range of the species includes States within the Tenth Circuit, such as that of the Chiricahua leopard frog, under the Tenth Circuit ruling in *Catron County Board of Commissioners* v. *U.S. Fish and Wildlife Service,* 75 F.3d 1429 (10th Cir. 1996), we will undertake a NEPA analysis for critical habitat designation

and notify the public of the availability of the draft environmental assessment for this proposal when it is finished.

Clarity of the Rule

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

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

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

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), E.O. 13175, and the Department of the 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. In accordance with Secretarial Order 3206 of June 5, 1997 "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act", we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes.

We have determined that there are no Tribal lands occupied at the time of listing that contain the features essential for the conservation of, and no Tribal lands that are essential for the conservation of, the Chiricahua leopard frog. Therefore, we have not proposed designation of critical habitat for the Chiricahua leopard frog on Tribal lands.

Energy Supply, Distribution, or Use

On May 18, 2001, the President issued an Executive Order (E.O. 13211; Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. We do not expect Chiricahua leopard frog critical habitat to significantly affect energy supplies, distribution, or use. As discussed above under *Regulatory Flexibility Act,* designation of critical habitat will require Federal agencies to consult with the Service on actions that may affect critical habitat. Those Federal actions could include construction of powerlines, energy pipelines, or other actions associated with energy supply, distribution, or use. The number of consultations may increase somewhat due to the two units that are not occupied; however, once in consultation, the outcome would not be substantially different unless there is an adverse modification biological opinion. Regardless of critical habitat, a Federal agency's proposed action would result in a consultation anyway because the consultation would be triggered by the presence of the species. Hence, critical habitat would very often make little difference in the consultation outcome, unless there is an adverse modification biological opinion. We expect the vast majority of consultations projects to proceed with only minor changes that do not affect the project purpose or objectives (Tobin 2010, p. 55). Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Arizona Ecological Services Field Office (*see* **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this package are the staff members of the Arizona Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

2. In § 17.11(h), revise the entry for "Frog, Chiricahua leopard" under "Amphibians" in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
AMPHIBIANS	.....	.....	.....		.....	.....	.....
*	*	*	*	*	*		*
Frog, Chiricahua leopard.	*Lithobates chiricahuensis.*	U.S.A. (AZ, NM), Mexico.	Entire	T	726	17.95(d)	17.43(b)
*	*	*	*	*	*		*

3. In § 17.95, amend paragraph (d) by adding an entry for "Chiricahua leopard frog (*Lithobates chiricahuensis*)," in the same alphabetical order that the species appears in the table at § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(d) *Amphibians.*

* * * * *

Chiricahua leopard frog (*Lithobates chiricahuensis*)

(1) Critical habitat units are depicted for Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai Counties, Arizona; and Catron, Grant, Hidalgo, Socorro, and Sierra Counties, New Mexico, on the maps below.

(2) The primary constituent elements of critical habitat for the Chiricahua leopard frog are:

(i) Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:

(A) Perennial (water present during all seasons of the year) or nearly perennial pools or ponds at least 6.0 feet (1.8 meters) in diameter and 20 inches (0.5 meters) in depth;

(B) Wet in most years, and do not or only very rarely dry for more than a month;

(C) pH greater than or equal to 5.6;

(D) Salinity less than 5 parts per thousand;

(E) Pollutants absent or minimally present at low enough levels that they are barely detectable;

(F) Emergent and or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof; but emergent vegetation does not completely cover the surface of water bodies;

(G) Nonnative crayfish, predatory fishes, bullfrogs, barred tiger salamanders, and other introduced predators absent or occurring at levels that do not preclude presence of the Chiricahua leopard frog;

(H) Absence of chytridiomycosis, or if chytridiomycosis is present, then conditions that allow persistence of Chiricahua leopard frogs with the disease (e.g., water temperatures that do not drop below 20 °C (68 °F), pH of greater than 8 during at least part of the year); and

(I) Uplands immediately adjacent to breeding sites that Chiricahua leopard frogs use for foraging and basking.

(ii) Dispersal habitat, consisting of ephemeral (water present for only a short time), intermittent, or perennial drainages that are generally not suitable for breeding, and associated uplands that provide overland movement corridors for frogs among breeding sites in a metapopulation with the following characteristics:

(A) Are not more than 1.0 mile (1.6 kilometers) overland, 3.0 miles (4.8 kilometers) along ephemeral or intermittent drainages, 5.0 miles (8.0 kilometers) along perennial drainages, or some combination thereof not to exceed 5.0 miles (8.0 kilometers);

(B) Provide some vegetation cover for protection from predators, and in drainages, some ephemeral, intermittent, or perennial aquatic sites; and

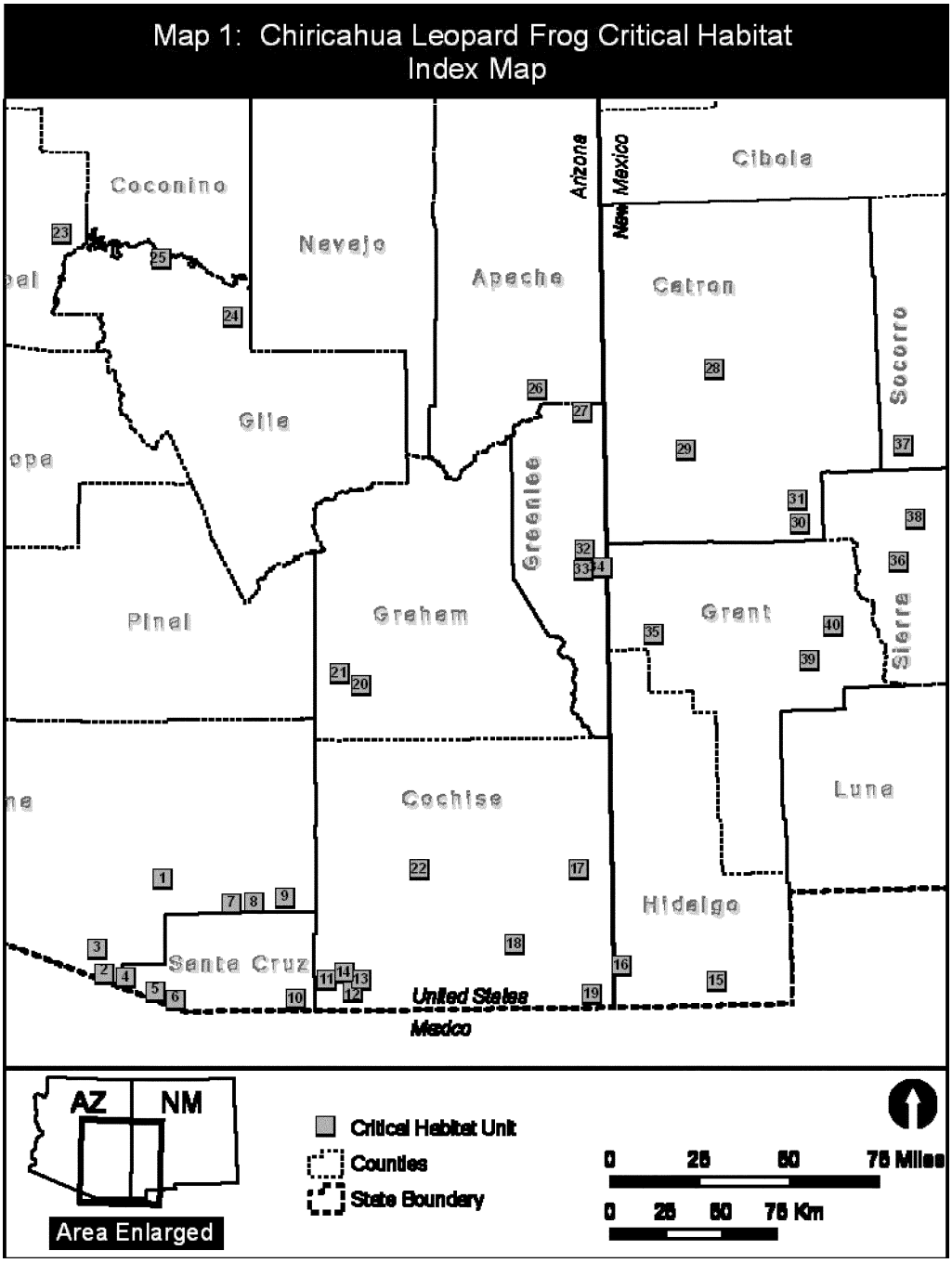
(C) Are free of barriers that block movement by Chiricahua leopard frogs, including urban, industrial, or agricultural development; reservoirs that are 50 acres (20 hectares) or more in size and stocked with predatory fishes, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that physically block movement.

(3) With the exception of impoundments, livestock tanks, and other constructed waters, critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) Critical habitat map units. Data layers defining map units were created on a base of USGS 7.5' quadrangles, the Service's online Lands Mapper, the U.S. Geological Survey National Hydrography Dataset, and imagery from Google Earth. Lentic water bodies were digitized from Google Earth imagery. Point locations for lentic water bodies (still or non-flowing water bodies) were calculated as the geographic centroids of the digitized polygons defining the critical habitat boundaries. Line locations for lotic streams (flowing water) and drainages are depicted as the "Flowline" feature class from the National Hydrography Dataset geodatabase. Overland connections were digitized from Google Earth imagery. Administrative boundaries for Arizona and New Mexico were obtained from the Arizona Land Resource Information Service and New Mexico Resource Geographic Information System, respectively. This includes the most current (as of the effective date of this rule) geospatial data available for land ownership, counties, States, and streets. Locations depicting critical habitat are expressed as decimal degree latitude and longitude in the World Geographic Coordinate System projection using the 1984 datum (WGS84). Information on Chiricahua leopard frog localities was derived from survey forms, reports, publications, field notes, and other sources, all of which reside in our files at the Arizona Ecological Services Field Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021. Coordinates given for tanks are the approximate center points of those tanks.

(5) *Note:* Index Map (Map 1) follows.

BILLING CODE 4310–55–P

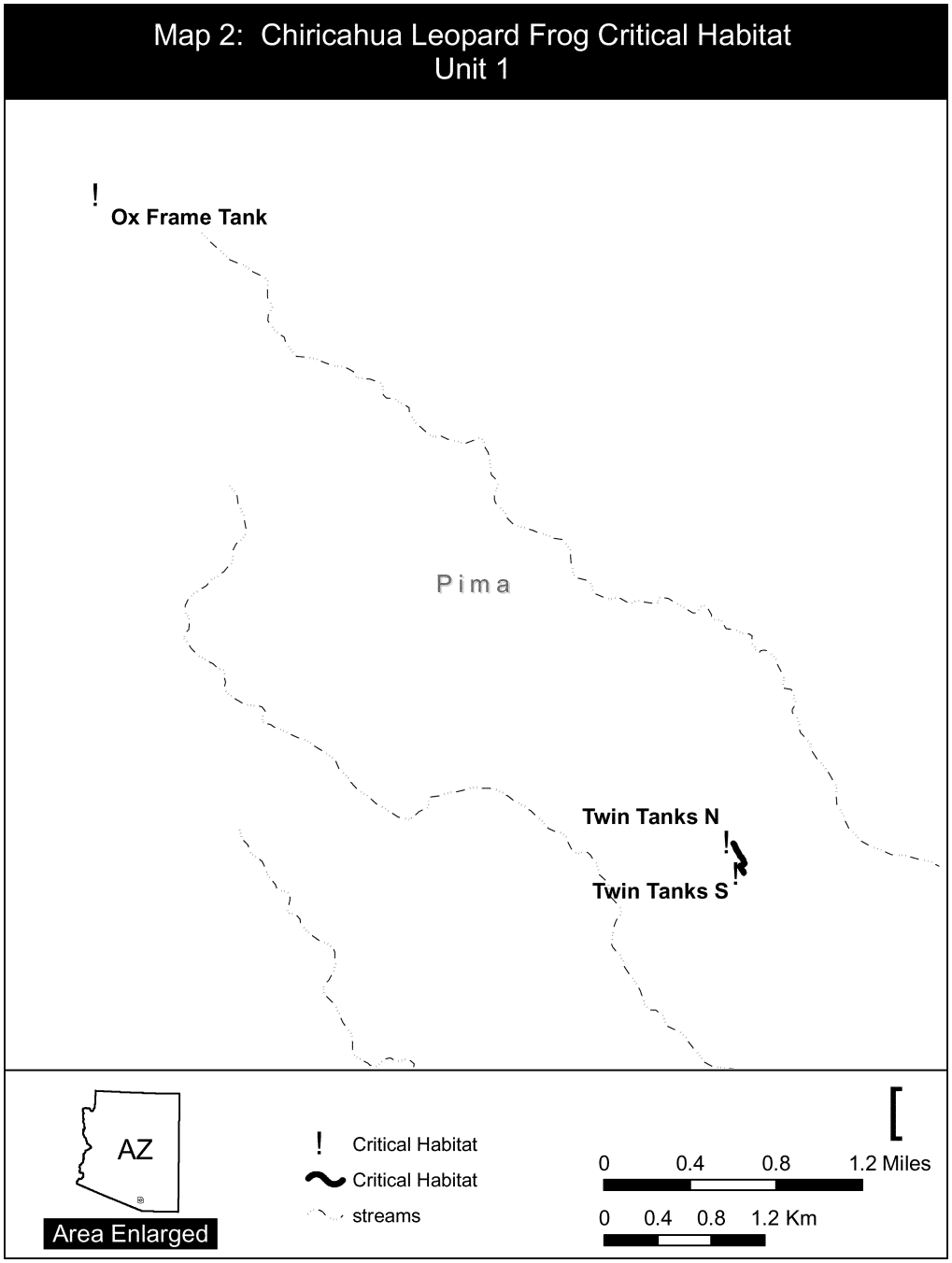


(6) Unit 1: Twin Tanks and Ox Frame Tank, Pima County, Arizona.

(i) Twin Tanks, including the north tank (31.838230 N, 111.149875 W) and south tank (31.836031 N 111.149102 W), and the drainage running between them, a drainage distance of 979 feet (299 meters).

(ii) Ox Frame Tank (31.881882 N, 111.200318 W).

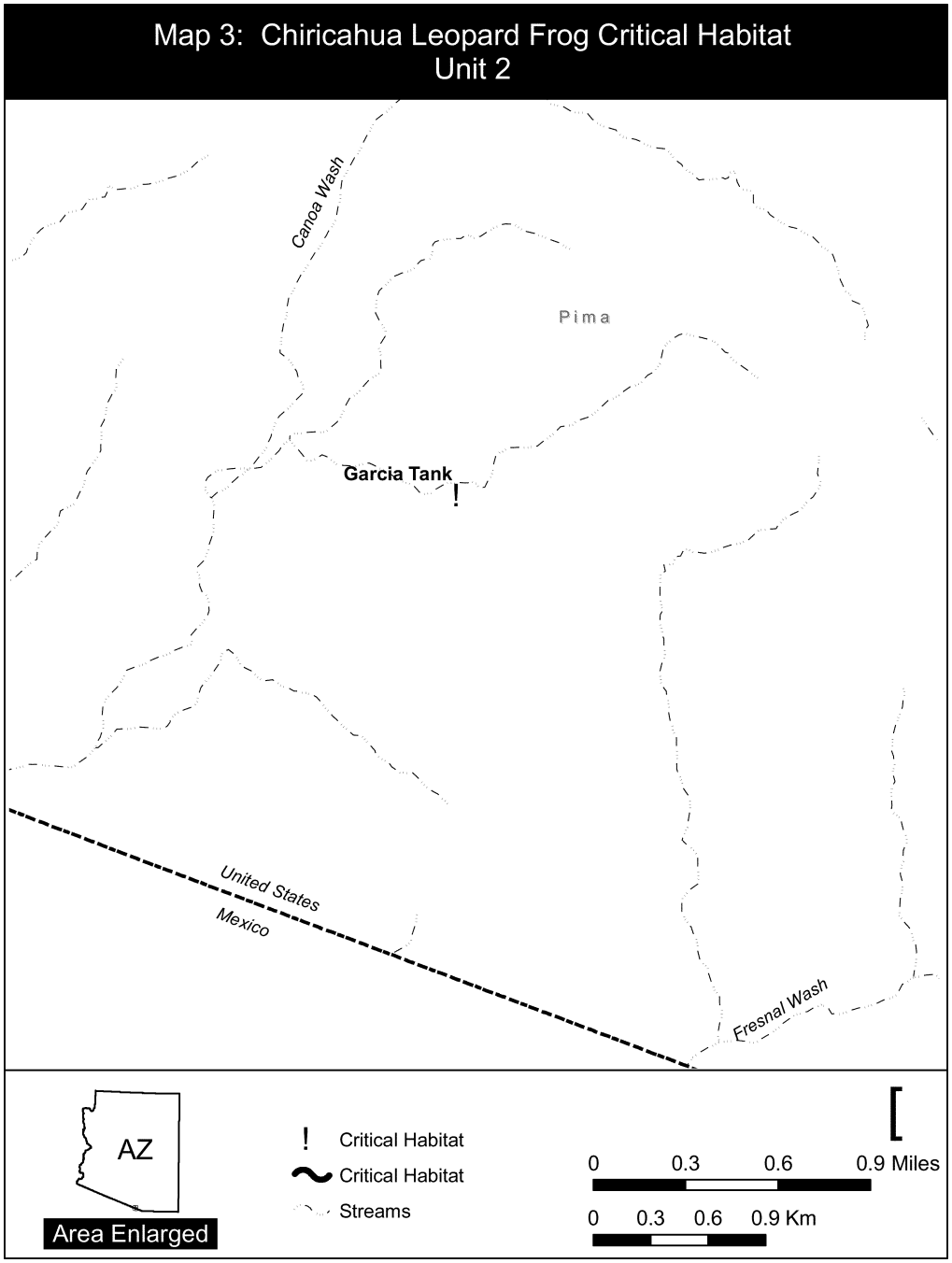
(iii) *Note:* Map of Unit 1, Twin Tanks and Ox Frame Tank (Map 2), follows:



(7) Unit 2: Garcia Tank, Pima County, Arizona.

(i) Garcia Tank (31.477060 N, 111.454114 W).

(ii) *Note:* Map of Unit 2, Garcia Tank (Map 3), follows:



(8) Unit 3: Buenos Aires NWR Central Tanks, Pima County, Arizona.

(i) Carpenter Tank (31.528748 N, 111.454642 W).

(ii) Rock Tank (31.583905 N, 111.462366 W).

(iii) State Tank (31.569254 N, 111.477114 W).

(iv) Triangle Tank (31.576105 N, 111.510909 W).

(v) New Round Hill Tank (31.613784 N, 111.489390 W).

(vi) Banado Tank (31.532759 N, 111.474729 W).

(vii) Choffo Tank (31.544627 N, 111.463126 W).

(viii) Barrel Cactus Tank (31.545284 N, 111.490310 W).

(ix) Sufrido Tank (31.566364 N, 111.445892 W).

(x) Hito Tank (31.579462 N, 111.446984 W.)

(xi) Morley Tank (31.599057 N, 111.489088 W).

(xii) McKay Tank (31.605788 N, 111.474188 W).

(xiii) Chongo Tank (31.64002 N, 111.50435 W).

(xiv) Arroyo del Compartidero from Triangle Tank (31.576105 N, 111.510909 W) downstream through and including Aguire Lake to an unnamed drainage (31.594035 N, 111.504265 W); then downstream in that unnamed drainage to its confluence with Bailey Wash (31.596674 N, 111.501912 W); then downstream in Bailey Wash to its confluence with Puertocito Wash (31.604618 N, 111.494127 W); then downstream in Puertocito Wash to its confluence with Las Moras Wash (31.636031 N, 111.471749 W), including New Round Hill Tank (31.613784 N, 111.489390 W); and upstream in Las Moras Wash to Chongo Tank (31.64002 N, 111.50435 W), a distance of approximately 8.52 drainage miles (13.70 kilometers).

(xv) An unnamed drainage from its confluence with Puertocito Wash (31.619650 N, 111.483551 W) upstream to McKay Tank (31.605788 N, 111.474188 W, which is a cluster of three tanks), a distance of approximately 1.55 drainage miles (2.50 kilometers).

(xvi) Puertocito Wash from its confluence with Bailey Wash (31.604618 N, 111.494127 W) upstream to Sufrido Tank (31.566364 N, 111.445892 W), including Morley Tank (31.599057 N, 111.489088 W), a distance of approximately 4.60 drainage miles (7.40 kilometers).

(xvii) An unnamed drainage from its confluence with Puertocito Wash upstream to Rock Tank (31.583905 N, 111.462366 W), then upstream in an unnamed drainage to the top of that drainage (31.582637 N, 111.456882 W) and directly overland to an unnamed drainage (31.583818 N, 111.455223 W), and then upstream to Hito Tank (31.579462 N, 111.446984 W) and downstream to McKay Tank (31.605788 N, 111.474188 W), a distance of approximately 3.80 drainage miles (6.11 kilometers) and 580 feet (177 meters) overland.

(xviii) Lopez Wash from Carpenter Tank (31.528748 N, 111.454642 W) downstream to its confluence with Aguire Lake (31.590582 N, 111.499589 W), a distance of approximately 6.75 drainage miles (10.87 kilometers).

(xix) An unnamed drainage from its confluence with Lopez Wash (31.542605 N, 111.466699 W) upstream to Choffo Tank (31.544627 N, 111.463126 W), a distance of approximately 1,549 drainage feet (472 meters).

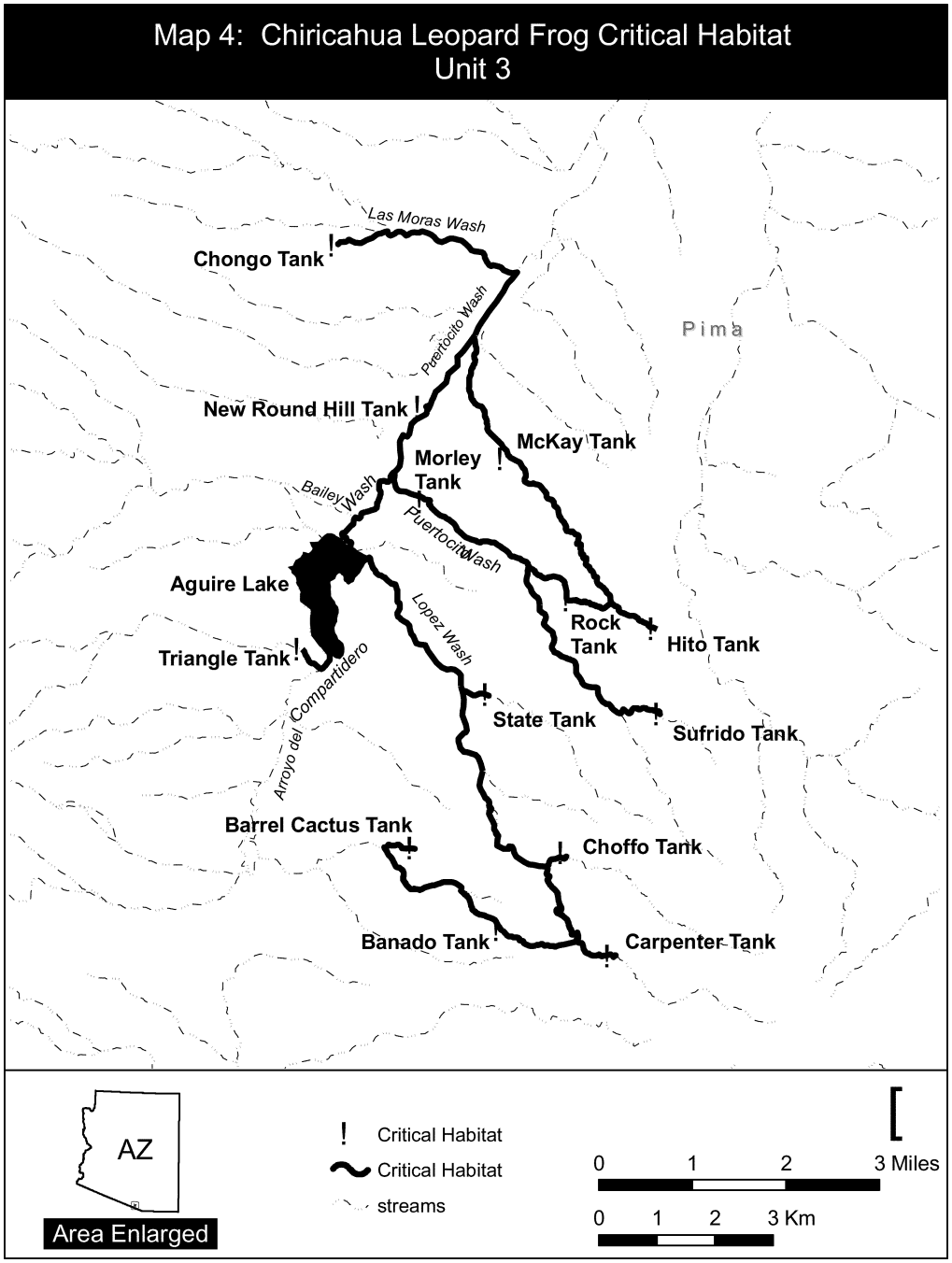
(xx) An unnamed drainage from its confluence with Lopez Wash (31.569735 N, 111.482058 W) upstream to State Tank (31.569254 N, 111.477114 W), a distance of approximately 1,613 drainage feet (492 meters).

(xxi) An unnamed drainage from Banado Tank (31.532759 N, 111.474729 W) downstream to the confluence with an unnamed drainage (31.545399 N, 111.496152 W), and then upstream in that drainage to Barrel Cactus Tank (31.545284 N, 111.490310 W), a distance of approximately 2.21 drainage miles (3.56 kilometers).

(xxii) An unnamed drainage from Banado Tank (31.532759 N, 111.474729 W) upstream to a saddle (31.530907 N, 111.463162 W), then directly downslope to Lopez Wash (31.532093 N, 111.462159 W), a distance of approximately 3,831 drainage feet (1,168 meters) and 808 feet (246 meters) overland.

(xxiii) *Note:* Map of Unit 3, Buenos Aires NWR Central Tanks (Map 4), follows:

BILLING CODE 4310–55–P



(9) Unit 4: Bonita, Upper Turner, and Mojonera Tanks, Santa Cruz County, Arizona.

(i) Bonita Tank (31.43525 N, 111.305505 W).

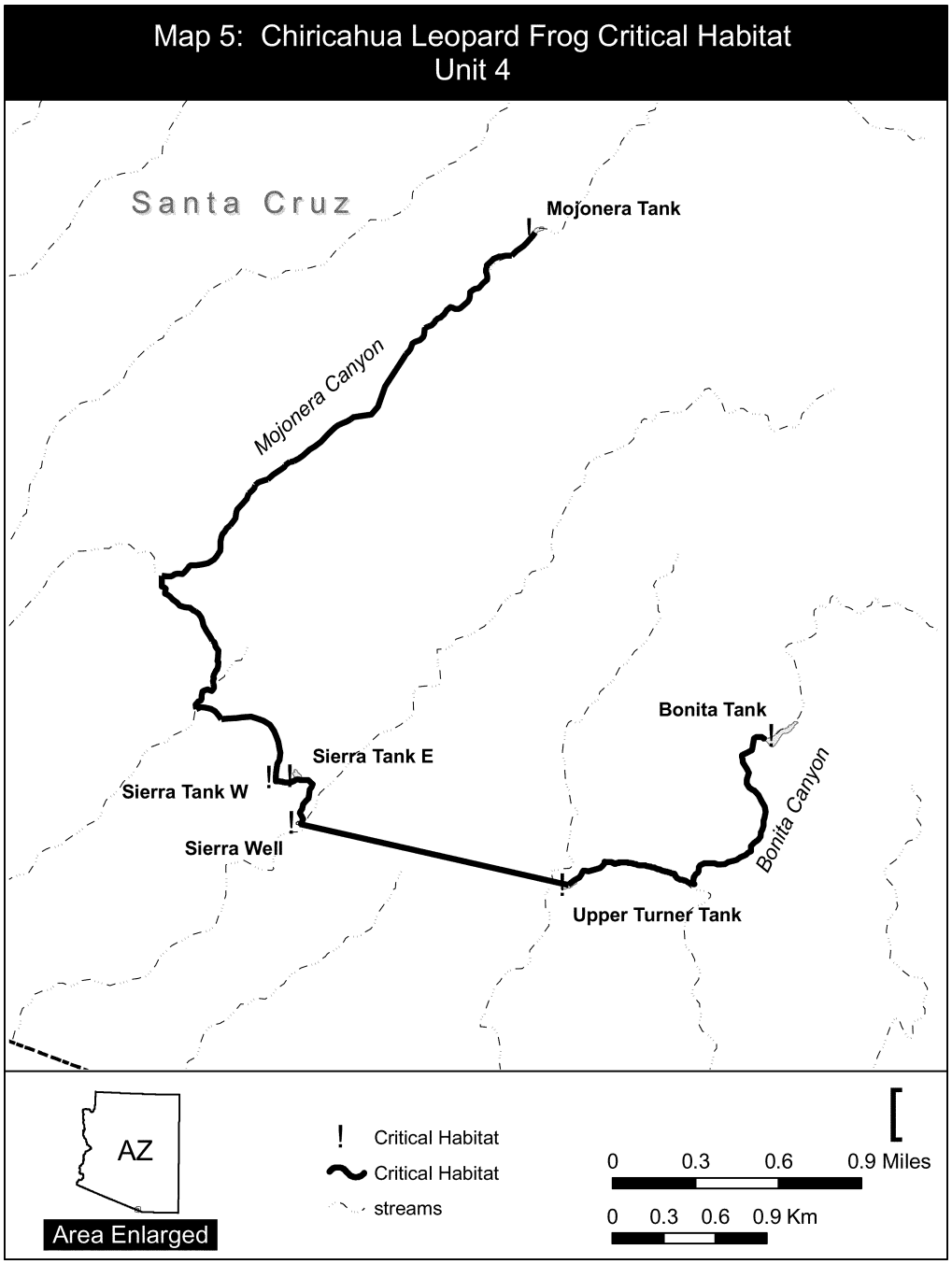
(ii) Upper Turner Tank (31.429690 N, 111.318332 W).

(iii) Mojonera Tank (31.464250 N, 111.320203 W).

(iv) From Upper Turner Tank (31.429690 N, 111.318332 W) upstream in an unnamed drainage to its confluence with a minor drainage coming in from the east (31.431029 N, 111.315846 W), then directly upslope in that drainage and east to a saddle (31.431015 N, 111.314770), and directly downslope through an unnamed drainage to Bonita Canyon (31.429806 N, 111.310325 W), and upstream in Bonita Canyon to Bonita Tank, a distance of approximately 1.29 drainage miles (2.08 kilometers) and 150 feet (46 meters) overland.

(v) From Mojonera Tank (31.464250 N, 111.320203 W) downstream in Mojonera Canyon to a sharp bend where the drainage turns west-northwest (31.445989 N, 111.343181 W); then southeast and upstream in an unnamed drainage to a saddle (31.443358 N, 111.340675 W) and downslope through an unnamed drainage to its confluence with another unnamed drainage (31.438637 N, 111.341044 W); then upstream in that unnamed drainage to a saddle (31.438497 N, 111.337639 W); then downstream in an unnamed drainage to Sierra Well (31.433012 N, 111.334709 W), to include Sierra Tank East (31.435488 N, 111.334736 W) and Sierra Tank West (31.435361 N, 111.336103 W); then directly overland to Upper Turner Tank (31.429690 N, 111.318332 W), a distance of approximately 3.45 drainage miles (5.56 kilometers) and 5,270 feet (1,606 meters) overland.

(vi) *Note:* Map of Unit 4, Bonita, Upper Turner, and Mojonera Tanks (Map 5), follows:



(10) Unit 5: Sycamore Canyon, Santa Cruz County, Arizona.

(i) Sycamore Canyon from the Ruby Road bridge (31.434030 N, 111.186537 W) south to the International Boundary (31.379952 N, 111.222937 W), a distance of 6.35 stream miles (10.23 kilometers).

(ii) Yank Tank (31.425426 N, 111.183289 W).

(iii) North Mesa Tank (31.415697 N, 111.167584 W).

(iv) Horse Pasture Spring (31.406812 N, 111.184717 W).

(v) Bear Valley Ranch Tank (31.413617 N, 111.176818 W).

(vi) South Mesa Tank (31.406832 N, 111.164505 W).

(vii) Rattlesnake Tank (31.400654 N, 111.163470 W).

(viii) Yanks Canyon from Yank Tank (31.425426N, 111.183289W) downstream to its confluence with Sycamore Canyon (31.428987 N, 111.190679 W), a distance of approximately 2,822 drainage feet (860 meters).

(ix) From North Mesa Tank (31.415697 N, 111.167584 W) downstream in Atascosa Canyon to its confluence with Peñasco Canyon

(31.402594 N, 111.186647 W), then from that confluence downstream in Peñasco Canyon to its confluence with Sycamore Canyon (31.407395 N, 111.195820 W), a distance of approximately 2.91 drainage miles (4.69 kilometers).

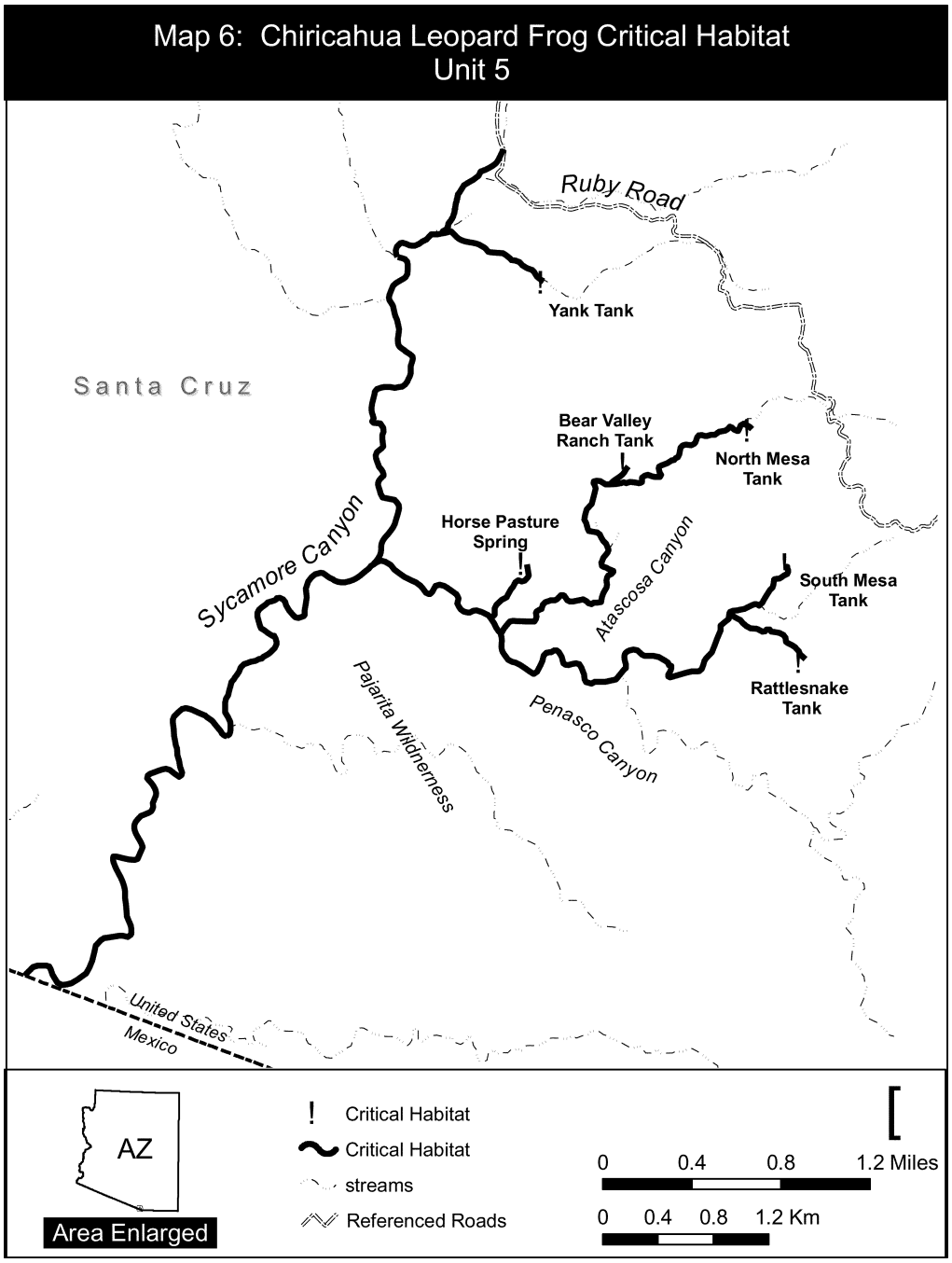
(x) From Horse Pasture Spring (31.406812 N, 111.184717 W) downstream to Peñasco Canyon, a drainage distance of approximately 1,759 feet (536 meters).

(xi) From Bear Valley Ranch Tank (31.413617 N, 111.176818 W) downstream in an unnamed drainage to its confluence with Atascosa Canyon (31.402583 N, 111.186593 W), a drainage distance of approximately 611 stream feet (186 meters).

(xii) From South Mesa Tank (31.406832 N, 111.164505 W) downstream in unnamed drainage to its confluence with another unnamed drainage (31.403615 N, 111.169213 W), then downstream in that unnamed drainage to its confluence with Peñasco Canyon (31.399519 N, 111.177701 W), then downstream in Peñasco Canyon to its confluence with Atascosa Canyon (31.402594 N, 111.186647 W), a drainage distance of approximately 2.05 miles (3.30 kilometers).

(xiii) From Rattlesnake Tank (31.400654 N, 111.163470 W) downstream in an unnamed drainage to its confluence with another unnamed drainage (31.403615 N, 111.169213 W), a drainage distance of approximately 2,274 feet (693 meters).

(xiv) *Note:* Map of Unit 5, Sycamore Canyon (Map 6), follows:



(11) Unit 6: Peña Blanca Lake and Spring and Associated Tanks, Santa Cruz County, Arizona.

(i) Peña Blanca Lake (31.409091 N, 111.084971 W at the dam).

(ii) Peña Blanca Spring (31.388895 N, 111.092297 W).

(iii) Summit Reservoir (31.396565 N, 111.141347 W).

(iv) Tinker Tank (31.380107 N, 111.136359 W).

(v) Coyote Tank (31.369894 N, 111.150751 W).

(vi) Thumb Butte Tank (31.388426 N, 111.118105 W).

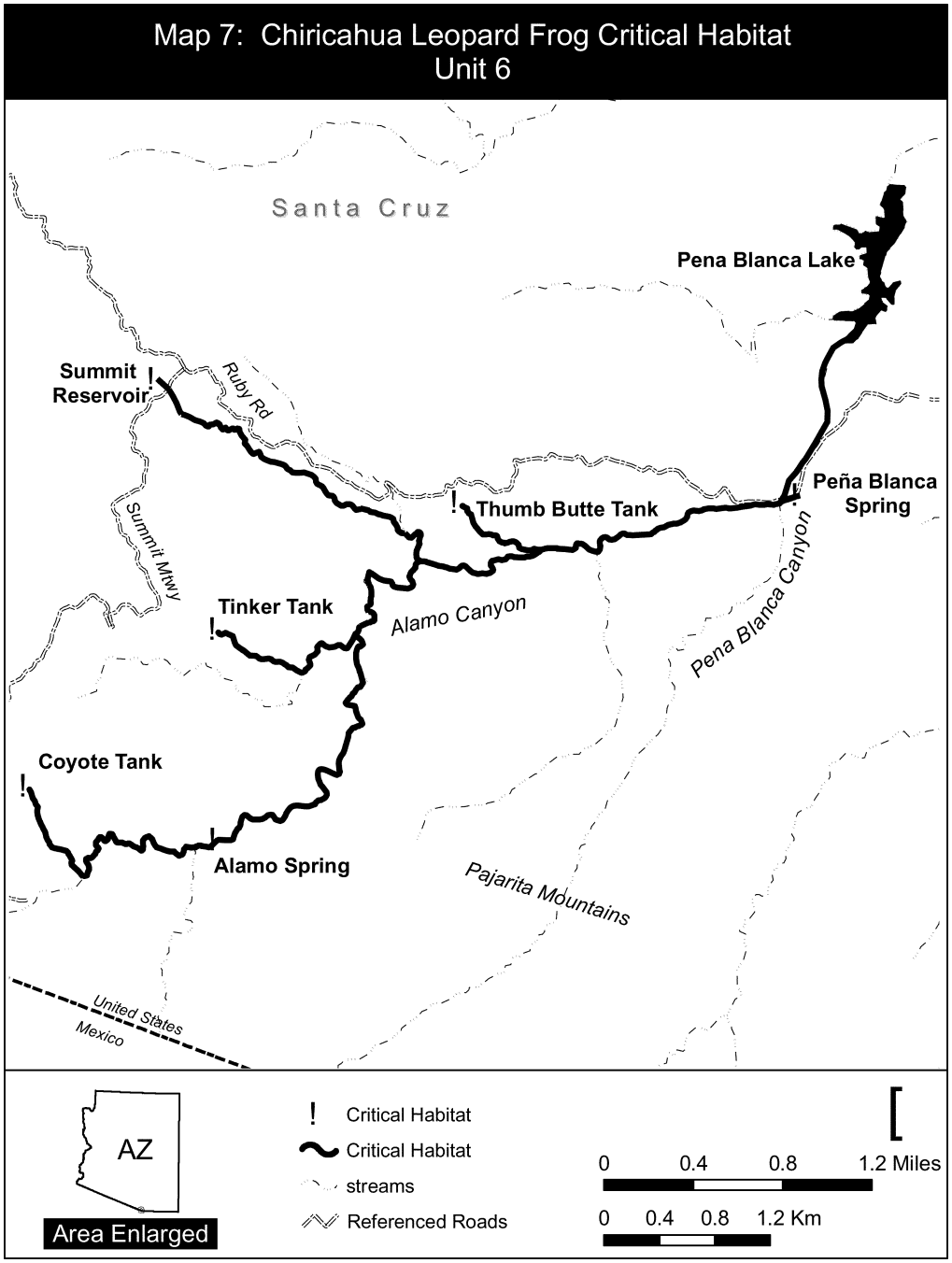
(vii) From Summit Reservoir directly southeast to a saddle on Summit Motorway (31.395580 N, 111.140552 W), then directly downslope to an unnamed drainage at (31.394133 N, 111.139450 W) and downstream in that drainage to its confluence with Alamo Canyon (31.384521 N, 111.121496 W), then downstream in Alamo Canyon to its confluence with Peña Blanca Canyon (31.388301 N, 111.093728 W), then downstream in Peña Blanca Canyon to Peña Blanca Lake (31.409091 N, 111.084971 W at the dam) to include Peña Blanca Spring (31.388895 N, 111.092297 W), a distance of approximately 4.44 drainage miles (7.10 kilometers) and 1,040 feet (317 meters) overland.

(viii) From Thumb Butte Tank (31.388426 N, 111.118105 W) downstream in an unnamed drainage to its confluence with Alamo Canyon (31.385228 N, 111.112132 W), a distance of approximately 2,494 drainage feet (760 meters).

(ix) From Tinker Tank (31.380107 N, 111.136359 W) downstream in an unnamed drainage to its confluence with Alamo Canyon (31.379693 N, 111.126053 W), then downstream in Alamo Canyon to the confluence with the drainage from Summit Reservoir (31.384521 N, 111.121496 W), a distance of approximately 1.55 drainage miles (2.50 kilometers).

(x) From Coyote Tank (31.369894 N, 111.150751 W) downstream in an unnamed drainage to its confluence with Alamo Canyon (31.365839 N, 111.138388 W); then downstream in Alamo Canyon to the confluence with the drainage from Tinker Tank (31.379693 N, 111.126053 W), to include Alamo Spring (31.365993 N, 111.137171 W), a distance of approximately 3.09 drainage miles (4.97 kilometers).

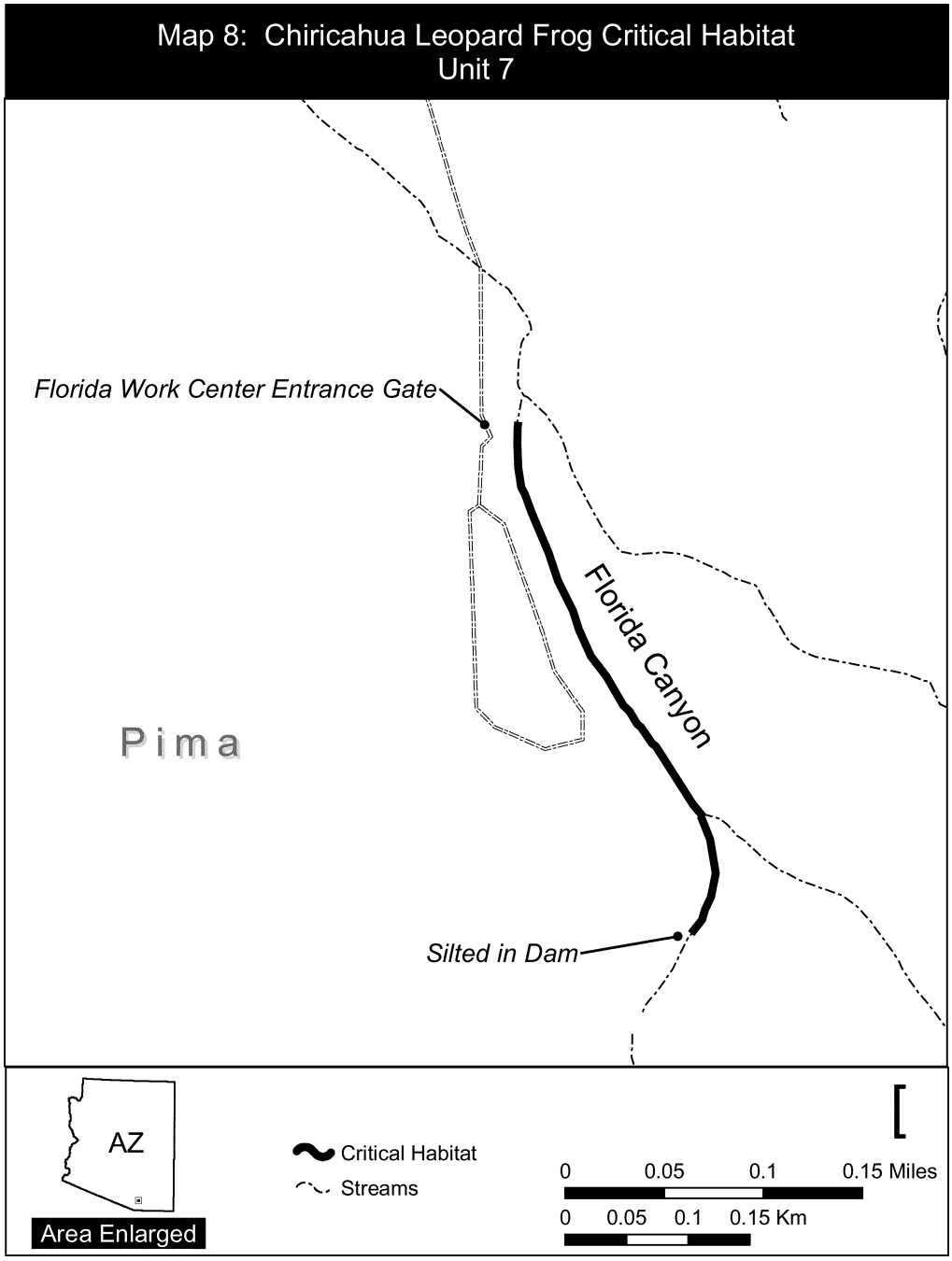
(xi) *Note:* Map of Unit 6, Peña Blanca Lake and Spring and Associated Tanks (Map 7), follows:



(12) Unit 7: Florida Canyon, Pima County, Arizona.

(i) Florida Canyon from a silted-in dam (31.759444 N, 110.844095 W) downstream to just east of the Florida Workstation entrance gate (31.763186 N, 110.845511 W), a distance of approximately 1,521 stream feet (463 meters).

(ii) *Note:* Map of Unit 7, Florida Canyon (Map 8), follows:



(13) Unit 8: Eastern Slope of the Santa Rita Mountains, Pima County, Arizona.

(i) Two galvanized metal tanks in Louisiana Gulch (31.74865 N, 110.72839 W).

(ii) Greaterville Tank (31.767186 N, 110.759818 W).

(iii) Los Posos Gulch Tank (31.768587 N, 110.731583 W).

(iv) Upper Granite Mountain Tank (31.760914 N, 110.760186 W).

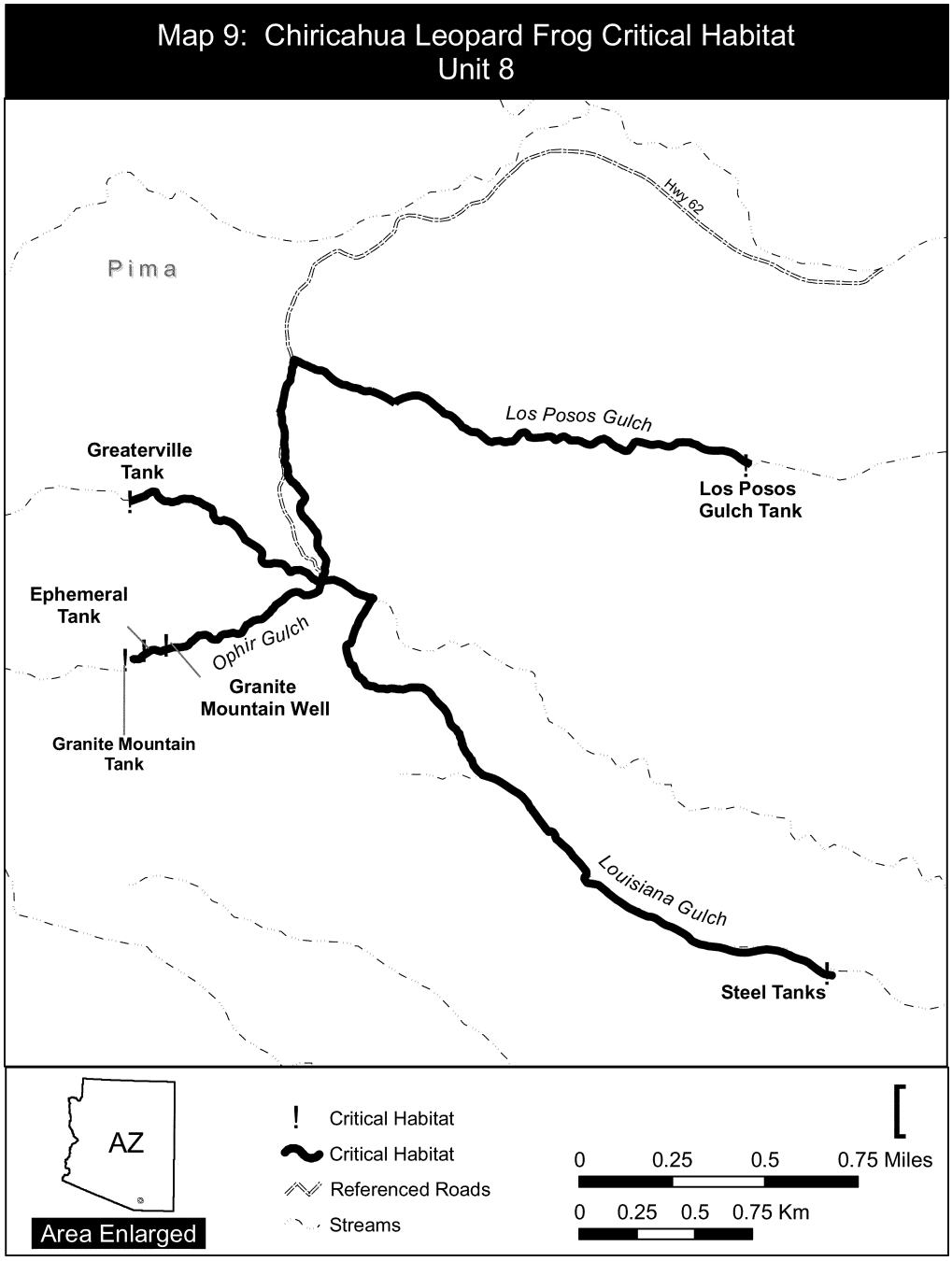
(v) From Los Posos Gulch Tank (31.768587 N, 110.731583 W) upstream to a saddle (31.771463 N, 110.748676 W); then downslope in an unnamed drainage to the confluence with another unnamed drainage (31.772830 N, 110.752727 W); then upstream and south in that drainage to a saddle (31.768245 N, 110.752891 W); then downslope in an unnamed drainage to its confluence with Ophir Gulch (31.763978 N, 110.751312 W); then upstream in Ophir Gulch to Upper Granite Mountain Tank (31.760914 N, 110.760186 W), to include an ephemeral tank (31.761388 N, 110.759184 W) and a well (31.761584 N, 110.758169 W), a distance of approximately 2.59 drainage miles (4.17 kilometers) and 984 feet (300 meters) overland.

(vi) From Greaterville Tank (31.767186 N, 110.759818 W) downstream in an unnamed drainage to its confluence with Ophir Gulch (31.763978 N, 110.751312 W), a distance of approximately 3,446 drainage feet (1,050 meters).

(vii) Louisiana Gulch from the metal tanks (31.74865 N, 110.72839 W) upstream to the confluence with an unnamed drainage (31.756493 N, 110.744175 W), then upstream in that drainage to its headwaters and across a saddle (31.759879 N, 110.748733 W) and downslope through an unnamed drainage to its confluence with Ophir

Gulch (31.762953 N, 110.749329 W), then upstream in Ophir Gulch to the confluence with the unnamed drainage mentioned in subparagraph (13)(v) of this entry (31.763978 N, 110.751312 W), a distance of approximately 1.98 drainage miles (3.19 kilometers) and 327 feet (100 meters) overland.

(viii) *Note:* Map of Unit 8, Eastern Slope of the Santa Rita Mountains (Map 9), follows:

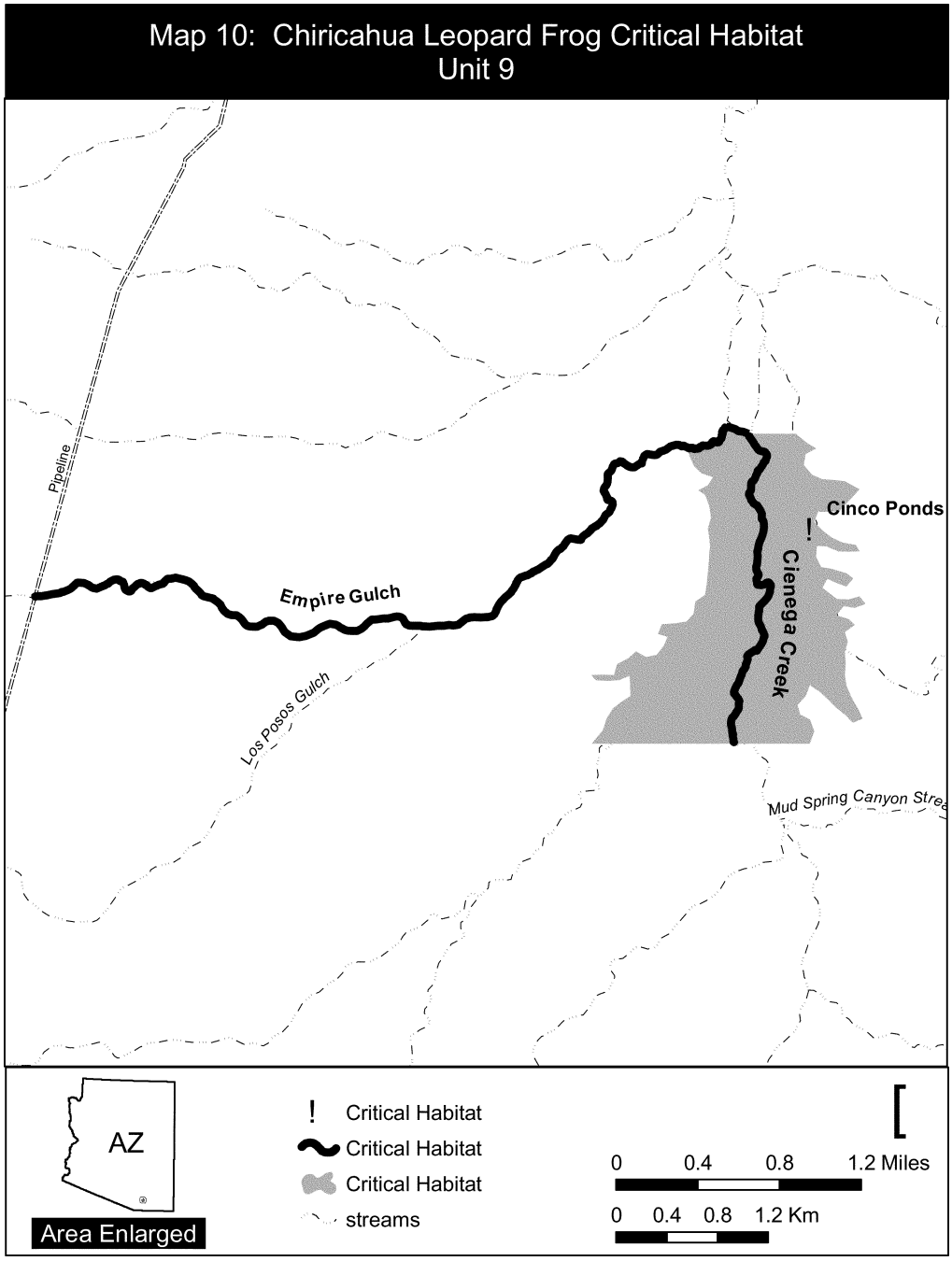


(14) Unit 9: Las Cienegas National Conservation Area, Pima County, Arizona.

(i) Empire Gulch near Empire Ranch, beginning at a pipeline access road crossing (31.787054 N, 110.648665 W) and continuing downstream to its confluence with Cienega Creek (31.808804 N, 110.589758 W), a distance of approximately 4.33 stream miles (6.98 kilometers).

(ii) Cienega Creek from the Empire Gulch confluence (31.808804 N, 110.589758 W) upstream to the approximate end of the wetted reach and where the creek bends hard to the east (31.776478 N, 110.590382 W), to include Cinco Ponds (31.793066 N, 110.584422 W upstream to 31.788559 N, 110.584114 W), a distance of approximately 1.91 stream miles (3.08 kilometers).

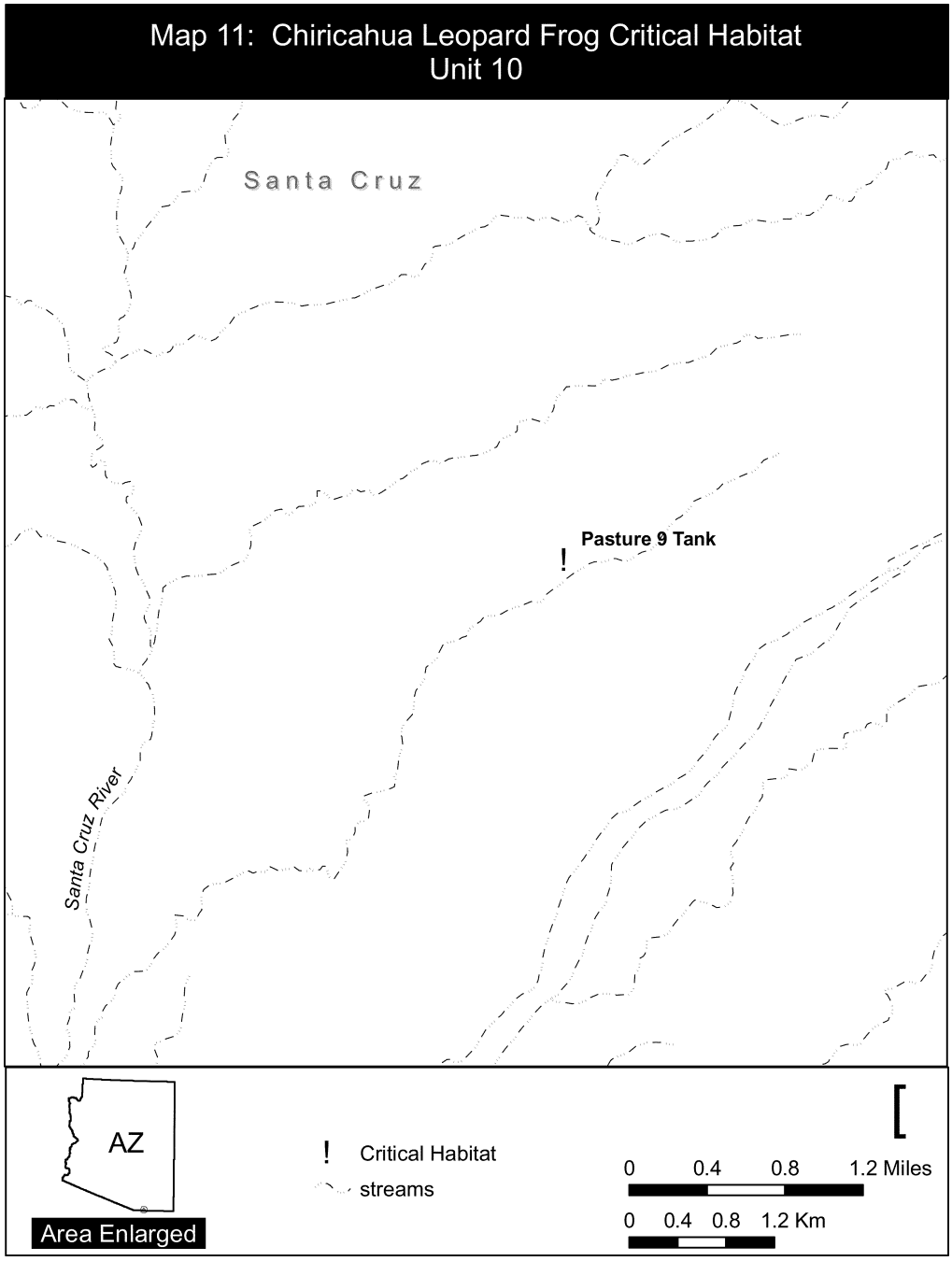
(iii) *Note:* Map of Unit 9, Las Cienegas National Conservation Area (Map 10), follows:



(15) Unit 10: Pasture 9 Tank, Santa Cruz County, Arizona.

(i) Pasture 9 Tank (31.375991 N, 110.548386 E).

(ii) *Note:* Map of Unit 10, Pasture 9 Tank (Map 11), follows:



(16) Unit 11: Scotia Canyon, Cochise County, Arizona.

(i) Peterson Ranch Pond (31.457016 N, 110.397724 W).

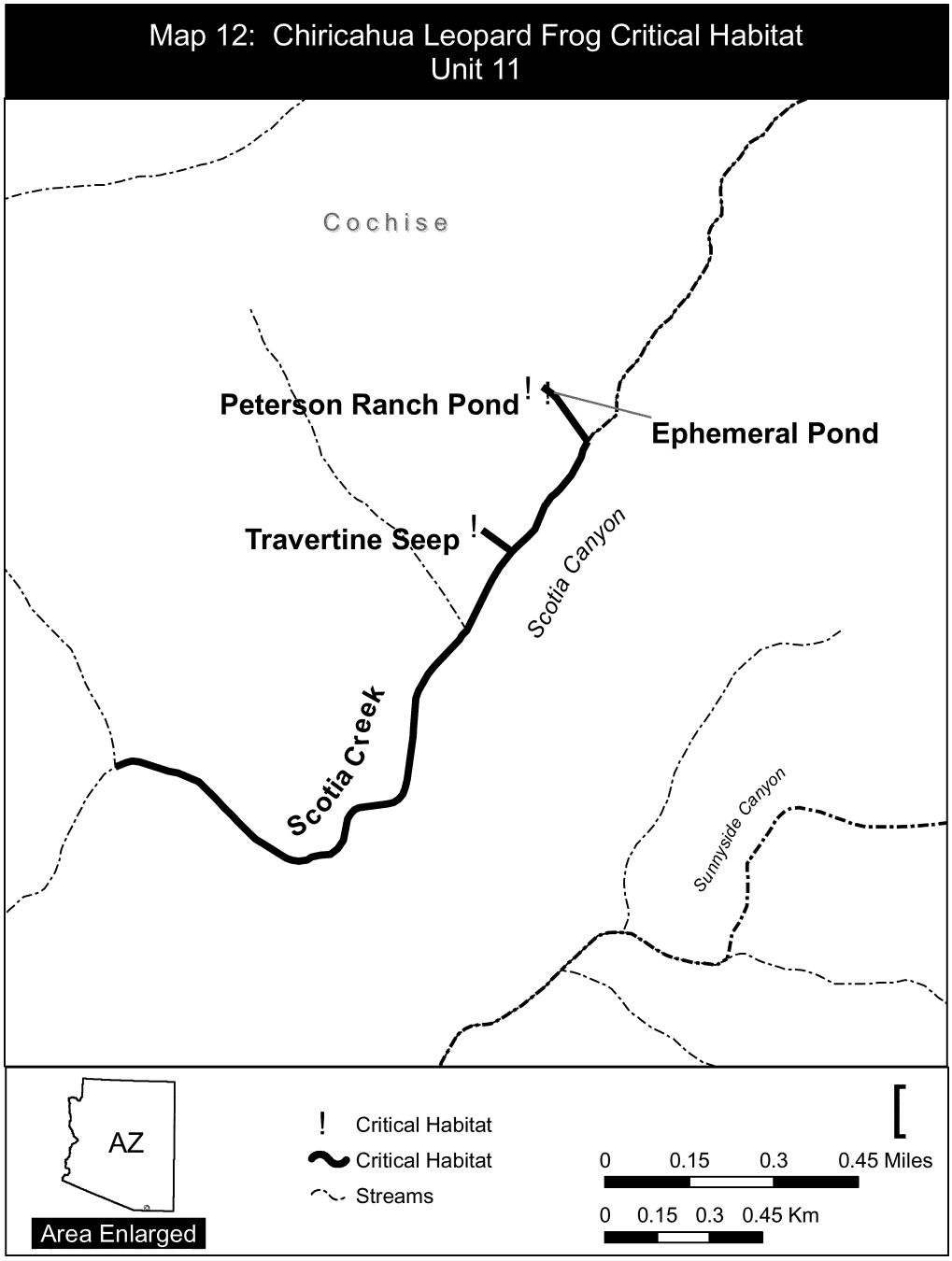
(ii) Travertine Seep (31.453466 N, 110.399386 W).

(iii) Creek in Scotia Canyon from just east of Peterson Ranch Pond (31.455723 N, 110.396124 W) downstream to the confluence of an unnamed drainage and a sharp bend in the canyon to the south (31.447598 N, 110.409884 W), a distance of approximately 1.36 stream miles (2.19 kilometers).

(iv) Overland from Peterson Ranch Pond (31.457016 N, 110.397724 W) to the upper end of the Scotia Creek segment (31.455723 N, 110.396124 W), to include an ephemeral pond (31.456929 N, 110.397120 W), an overland distance of approximately 671 feet (205 meters).

(v) Overland from the Travertine Seep (31.453466 N, 110.399386 W) directly southeast to Scotia Creek (31.452720 N, 110.398117 W), an overland distance of approximately 348 feet (106 meters).

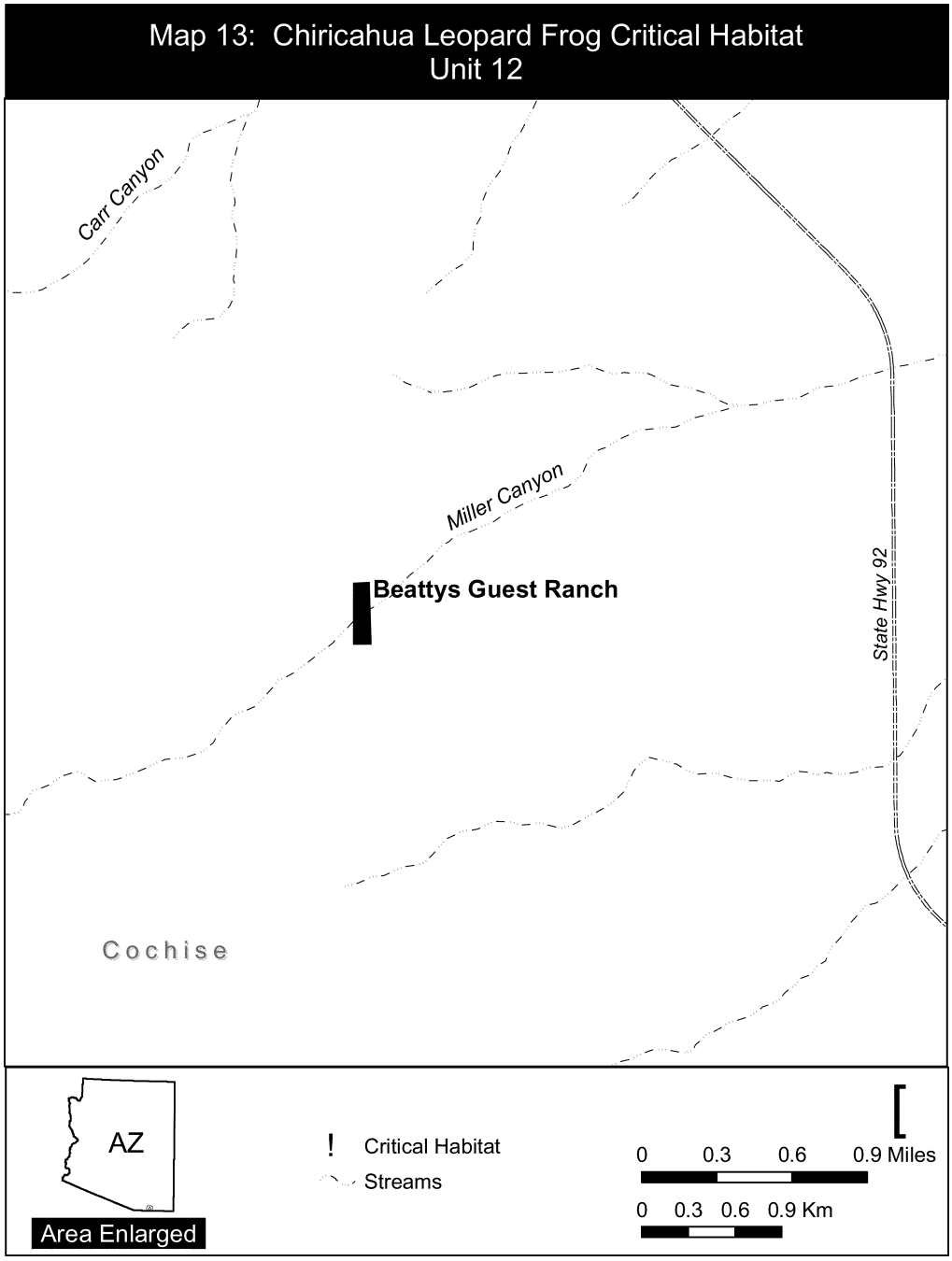
(vi) *Note:* Map of Unit 11, Scotia Canyon (Map 12), follows:



(17) Unit 12: Beatty's Guest Ranch, Cochise County, Arizona.

(i) Private inholding defined approximately as follows: Northwest corner (31.416425 N, 110.277493 W), northeast corner (31.416425 N, 110.276432 W), southeast corner (31.413455 N, 110.276432 W), and southwest corner (31.413455 N, 110.277493 W).

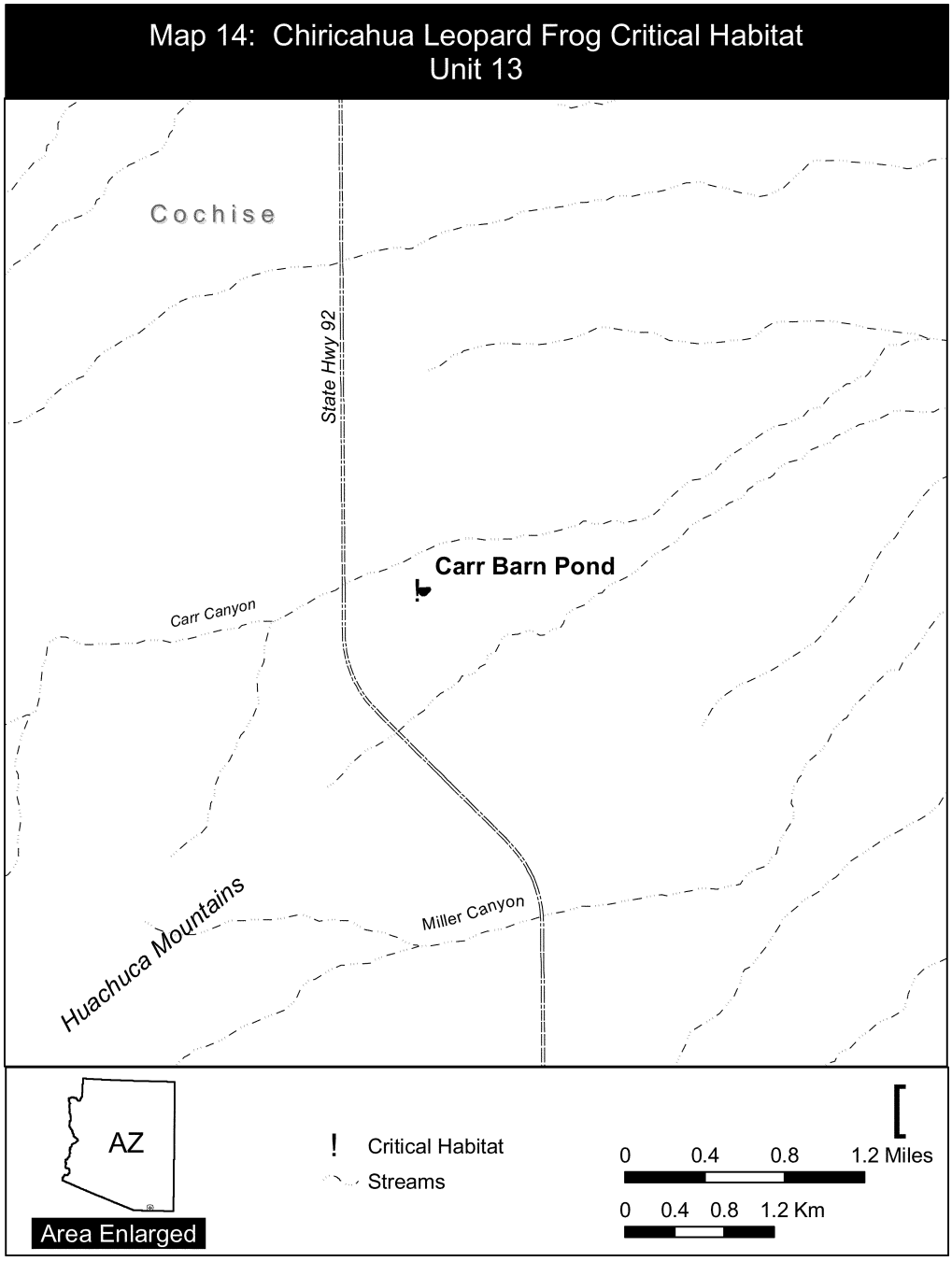
(ii) *Note:* Map of Unit 12, Beatty's Guest Ranch (Map 13), follows:



(18) Unit 13: Carr Barn Pond, Cochise County, Arizona.

(i) Carr Barn Pond (31.452461 N, 110.250355 W).

(ii) *Note:* Map of Unit 13, Carr Barn Pond (Map 14), follows:



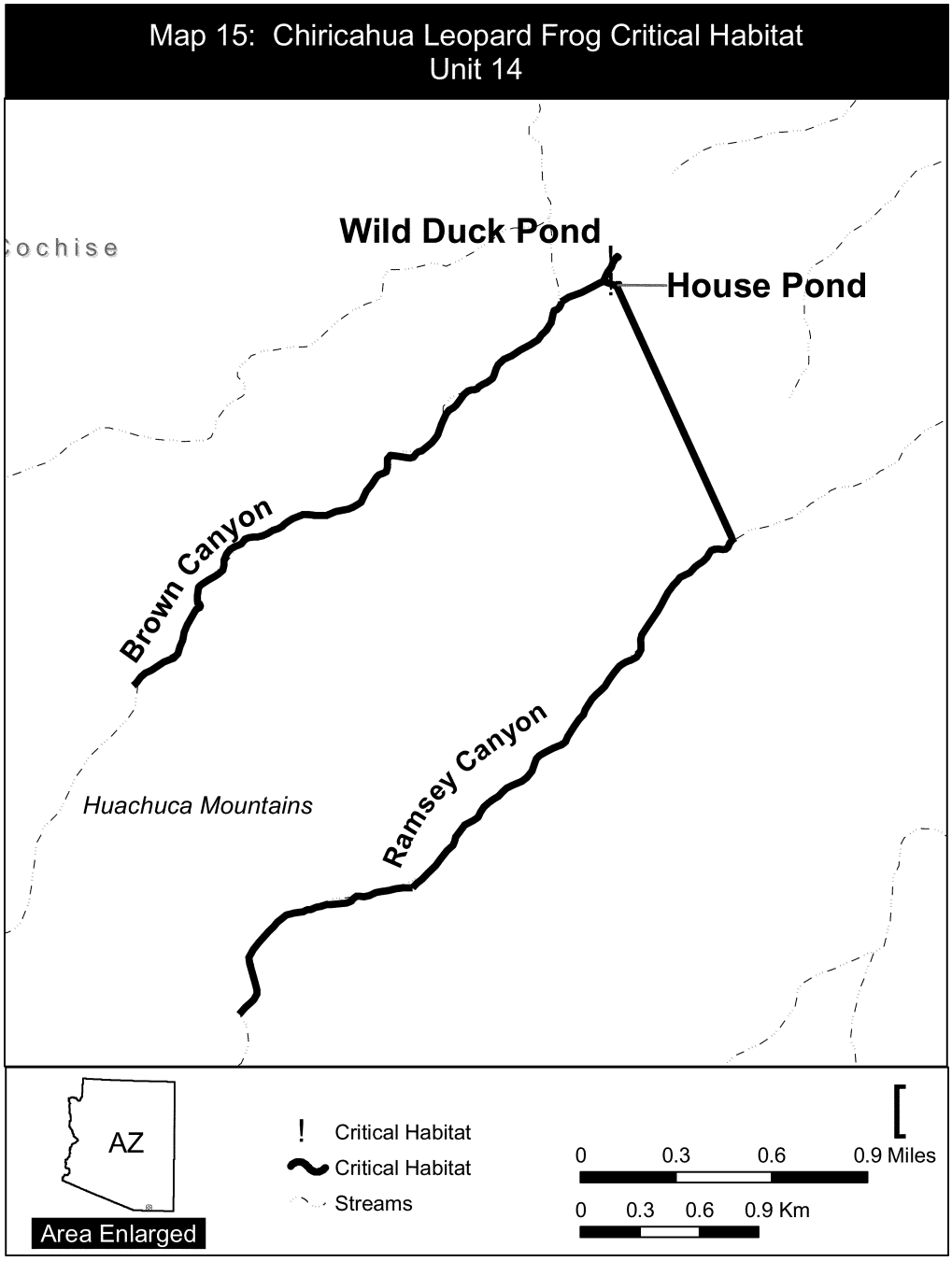
(19) Unit 14: Ramsey and Brown Canyons, Cochise County, Arizona.

(i) Ramsey Canyon from the upper end of The Box (31.440958 N, 110.317879 W) downstream to a dirt road crossing at the mouth of Ramsey Canyon (31.462315 N, 110.291248 W), an approximate stream distance of 2.35 miles (3.79 kilometers).

(ii) Brown Canyon from The Box (31.456016 N, 110.323853 W) downstream to the Wild Duck Pond (31.475355 N, 110.297592 W) and House Pond (31.474068 N, 110.297565 W) on the former Barchas Ranch, an approximate drainage distance of 2.26 miles (3.64 kilometers).

(iii) From the dirt road crossing at the mouth of Ramsey Canyon (31.462315 N, 110.291248 W) directly overland to House Pond (31.474068 N, 110.297565 W) on the former Barchas Ranch, a distance of approximately 4,594 feet (1,400 meters).

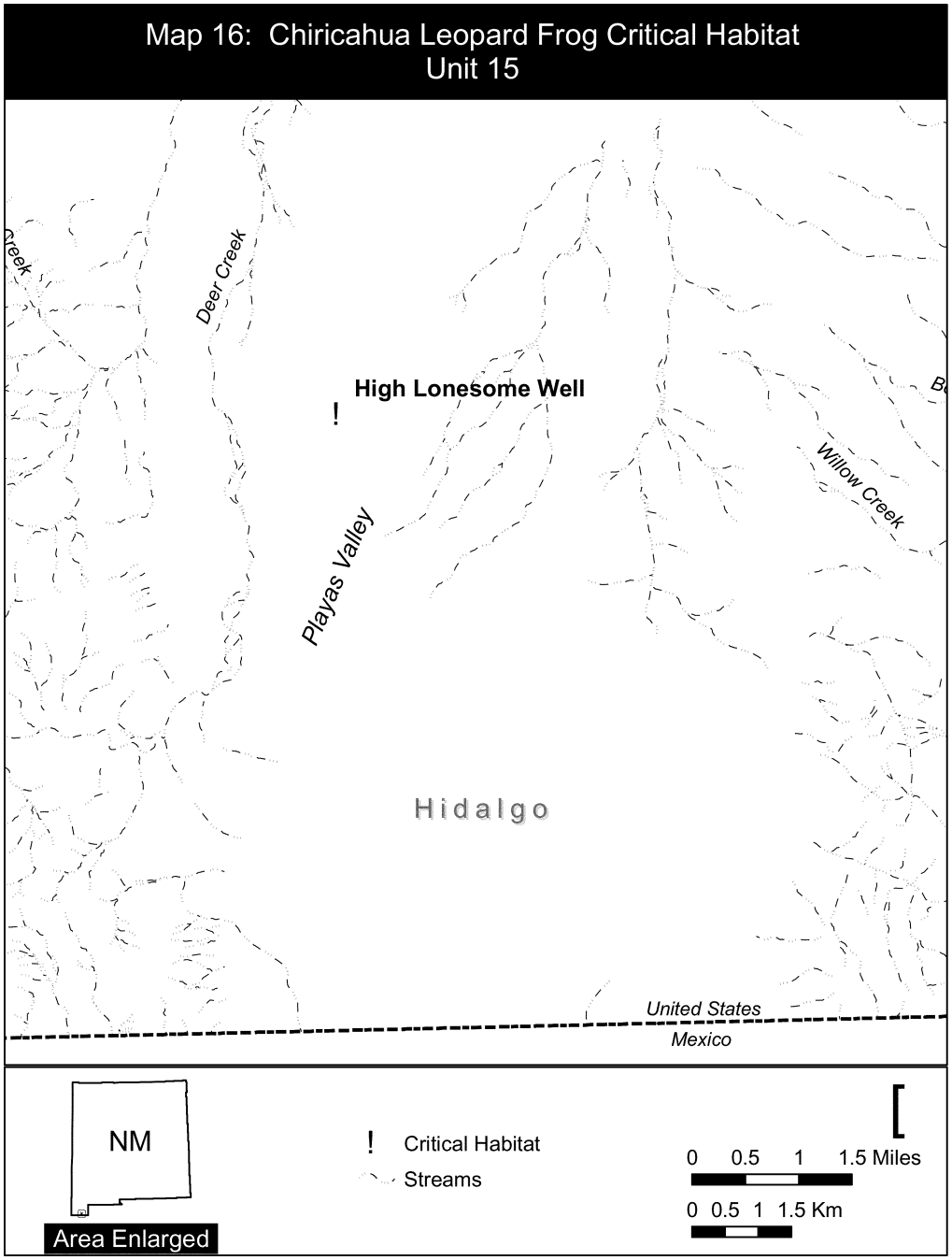
(iv) Note: Map of Unit 14, Ramsey and Brown Canyons (Map 15), follows:



(20) Unit 15: High Lonesome Well, Hidalgo County, New Mexico.

(i) High Lonesome Well (31.417206 N, 108.557791 W).

(ii) *Note:* Map of Unit 15, High Lonesome Well (Map 16), follows:



(21) Unit 16: Peloncillo Mountains Tanks, Hidalgo County, New Mexico.

(i) Geronimo Tank (31.520685 N, 109.016775 W).

(ii) State Line Tank (31.498451 N, 109.044940 W).

(iii) Javelina Tank (31.484995 N, 109.024970 W).

(iv) Canoncito Ranch Tank (31.449553 N, 109.986836 W).

(v) Maverick Spring (31.469376 N, 109.011142 W).

(vi) Cloverdale Creek from the Canoncito Ranch Tank (31.449553 N, 109.986836 W) downstream, including the cienega, to rock pools (31.432972 N, 108.966535 W) about 630 feet downstream of the Cloverdale road crossing of Cloverdale Creek, an approximate stream distance of 1.91 miles (3.07 kilometers) .

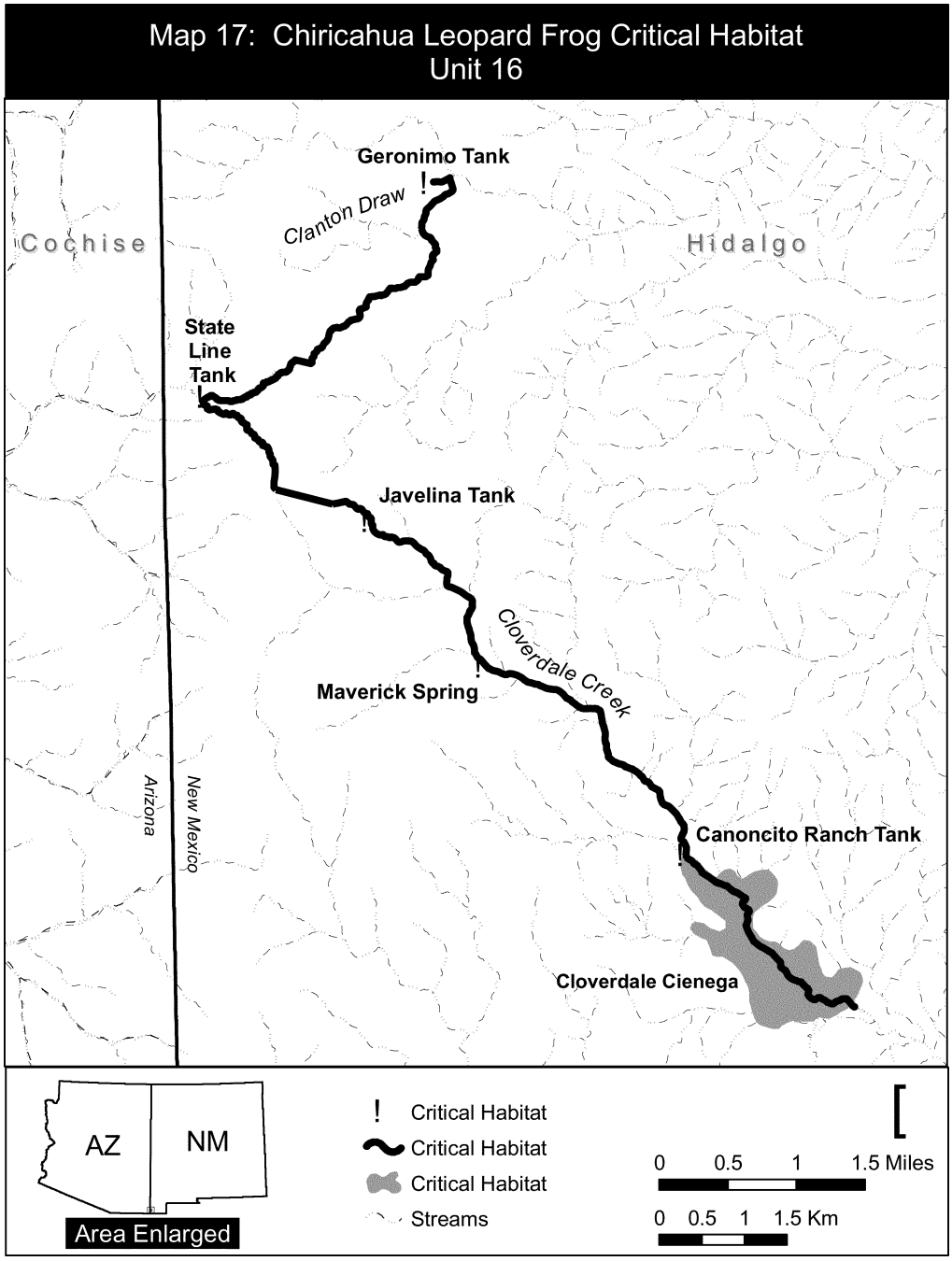
(vii) From Geronimo Tank (31.520685 N, 109.016775 W) downstream in an unnamed drainage to its confluence with Clanton Draw (31.520590 N, 109.012263 W), then upstream to the confluence with an unnamed drainage (31.515818 N, 109.018117 W), and upstream in that drainage to its headwaters (31.501854 N, 109.031898 W), across a mesa to the headwaters of an unnamed drainage (31.502220 N, 109.033839 W), then downslope through that drainage to State Line Tank (31.498451 N, 109.044940 W), an approximate drainage distance of 3.07 miles (4.94 kilometers) and 775 feet (236 meters) overland.

(viii) From State Line Tank upstream in an unnamed drainage to a mesa (31.488563 N, 109.036527 W), then directly overland to the headwaters of Cloverdale Creek (31.487477 N, 109.028002 W), and then downstream in Cloverdale Creek to Javelina Tank (31.484995 N, 109.024970 W), an approximate drainage distance of 1.40

miles (2.26 kilometers) and 2,245 feet (684 meters) overland.

(ix) From Javelina Tank (31.484995 N, 109.024970 W) downstream in Cloverdale Creek to the Canoncito Ranch Tank (31.449553 N, 109.986836 W), to include Maverick Spring (31.469376 N, 109.011142 W), an approximate stream distance of 3.88 miles (6.24 kilometers).

(x) Note: Map of Unit 16, Peloncillo Mountains Tanks (Map 17), follows:



(22) Unit 17: Cave Creek, Cochise County, Arizona.

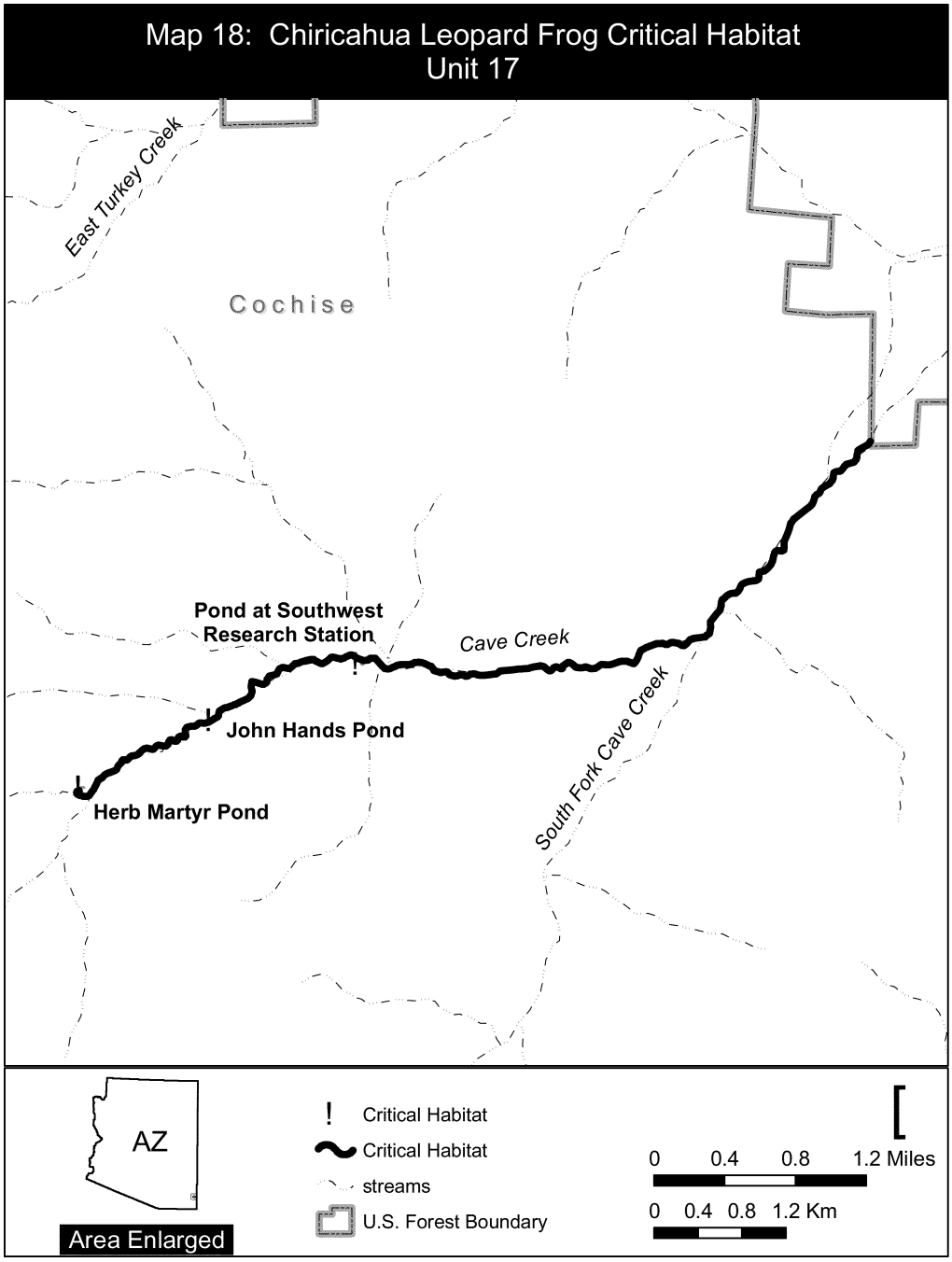
(i) Herb Martyr Pond (31.87243 N, 109.23418 W).

(ii) John Hands Pond below the dam (31.87868 N, 109.20470 W).

(iii) Pond at the Southwest Research Station (31.883235 N, 109.208670 W).

(iv) Cave Creek from Herb Martyr Pond (31.87243 N, 109.23418 W) downstream to the U.S. Forest Service boundary (31.899659 N, 109.159987 W), to include John Hands Pond (31.87868 N, 109.20470 W) and the Pond at the Southwest Research Station (31.883235 N, 109.208670 W), an approximate stream distance of 5.84 miles (9.41 kilometers).

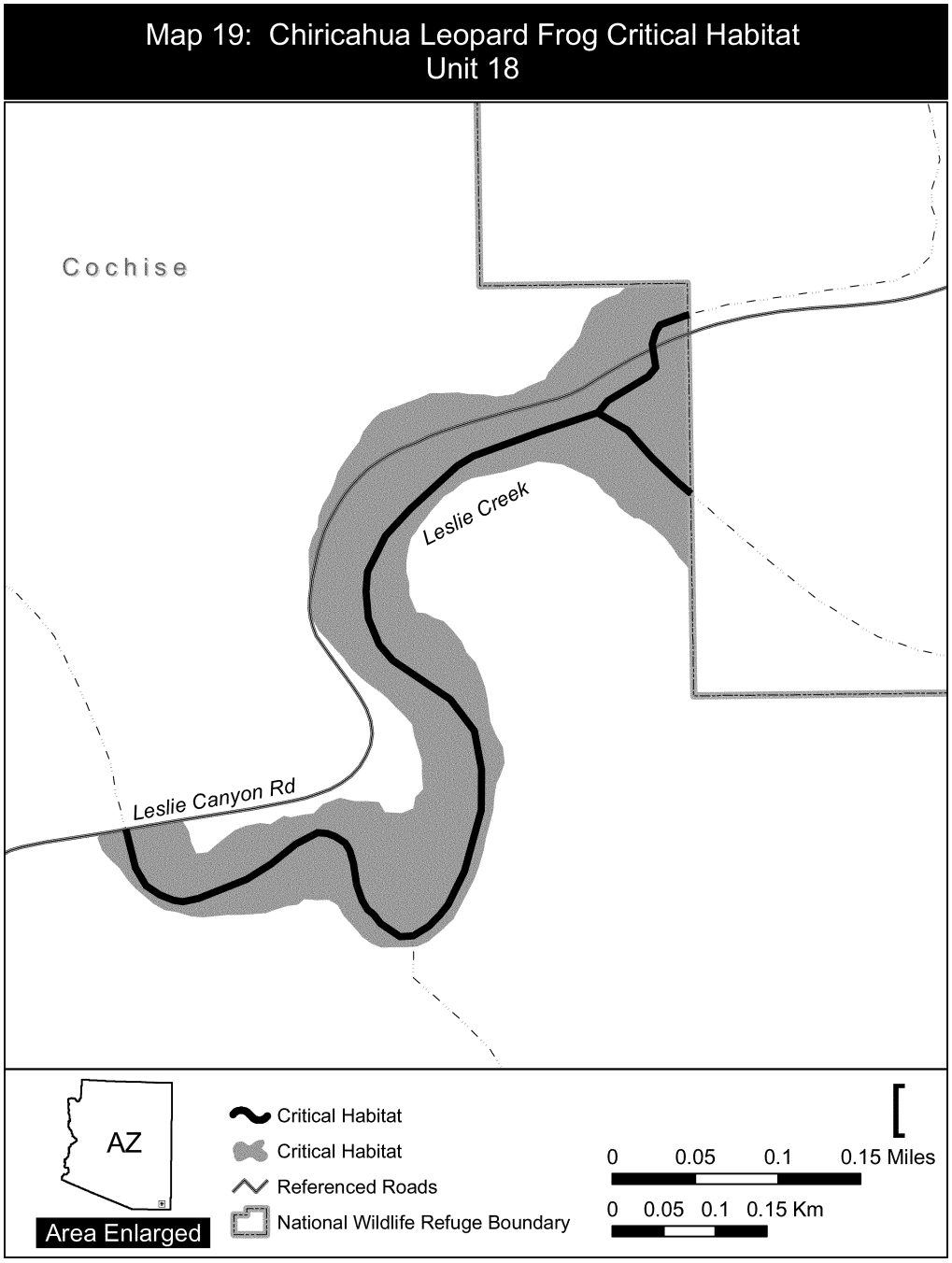
(v) *Note:* Map of Unit 17, Cave Creek (Map 18), follows:



(23) Unit 18: Leslie Creek, Cochise County, Arizona.

(i) Leslie Creek from the upstream National Wildlife Refuge boundary (31.591072 N, 109.505311 W) downstream to the Leslie Canyon Road crossing (31.588510 N, 109.511598 W), an approximate stream distance of 4,094 feet (1,248 meters).

(ii) *Note:* Map of Unit 18, Leslie Creek (Map 19), follows:



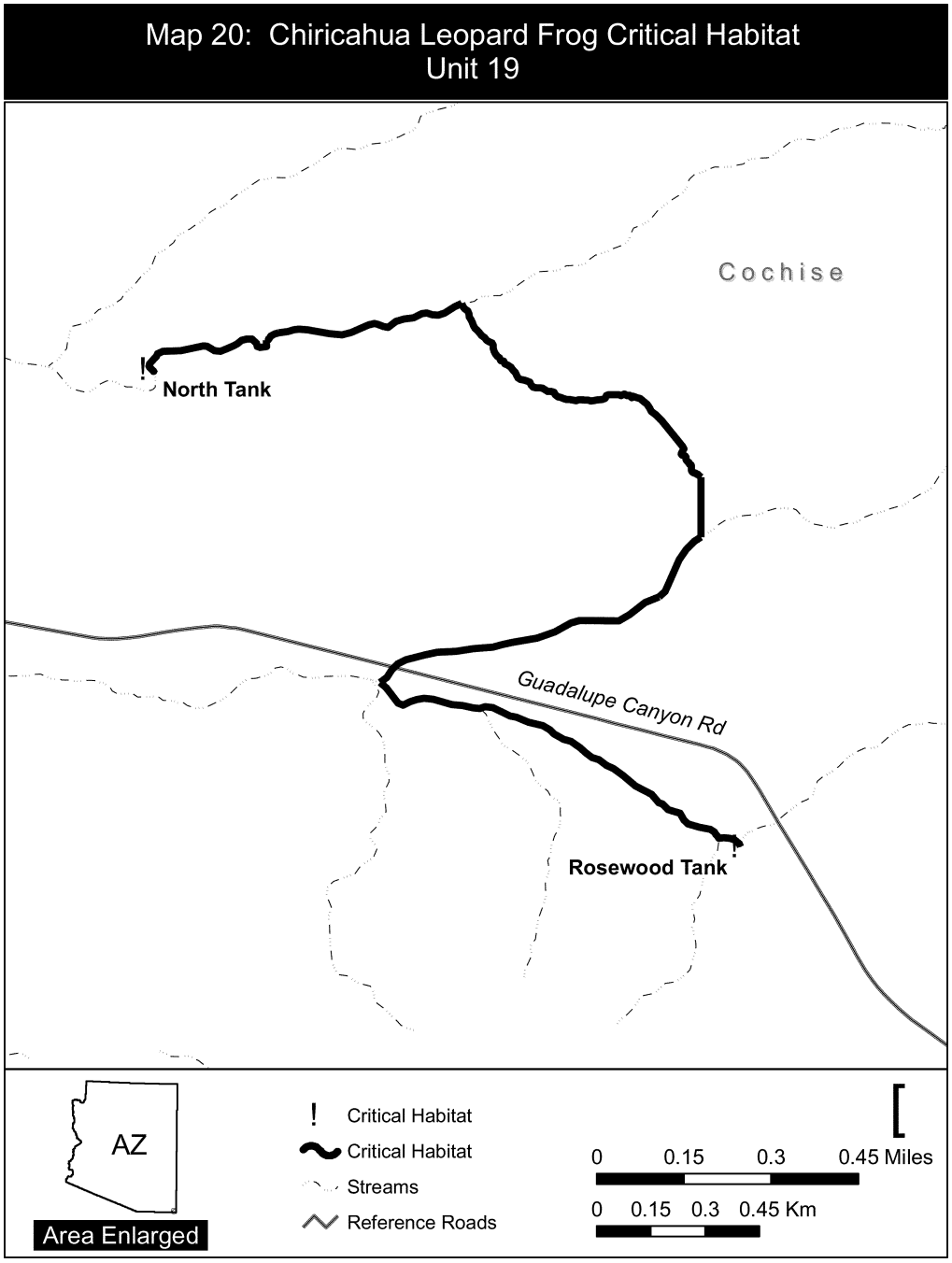
(24) Unit 19: Rosewood and North Tanks, Cochise County, Arizona.

(i) Rosewood Tank (31.374888 N, 109.143796 W).

(ii) North Tank (31.38696 N, 109.16115 W).

(iii) From Rosewood Tank (31.374888 N, 109.143796 W) downstream in an unnamed drainage that is parallel to and just south of Guadalupe Canyon Road to its confluence with a large unnamed drainage (31.379088 N, 109.154754 W), then upstream in that drainage, under Guadalupe Canyon Road and east to its confluence with a minor unnamed drainage (31.384072 N, 109.144919 W), then upstream in that unnamed minor drainage to its headwaters (31.384820 N, 109.145383 W), then overland to the headwaters of another unnamed drainage (31.385462 N, 109.145980 W), then downstream in that drainage to its confluence with the drainage containing North Tank (31.388383 N, 109.151692 W), and then downstream in that drainage to North Tank, an approximate distance of 2.57 drainage miles (4.14 kilometers) and 543 feet (166 miles) overland.

(iv) *Note:* Map of Unit 19, Rosewood and North Tanks (Map 20), follows:



(25) Unit 20: Deer Creek, Graham County, Arizona.

(i) Home Ranch Tank (32.656879 N, 110.274556 W).

(ii) Penney Mine Tanks, which includes a series of 10 small impoundments in a drainage from approximately 32.668795 N, 110.257763 W downstream to 32.670055 N, 110.257310 W.

(iii) Clifford Tank (32.67130 N, 110.264877 W).

(iv) Vermont Tank (32.676883 N, 110.262404 W).

(v) Middle Tank (32.679691 N, 110.252180 W).

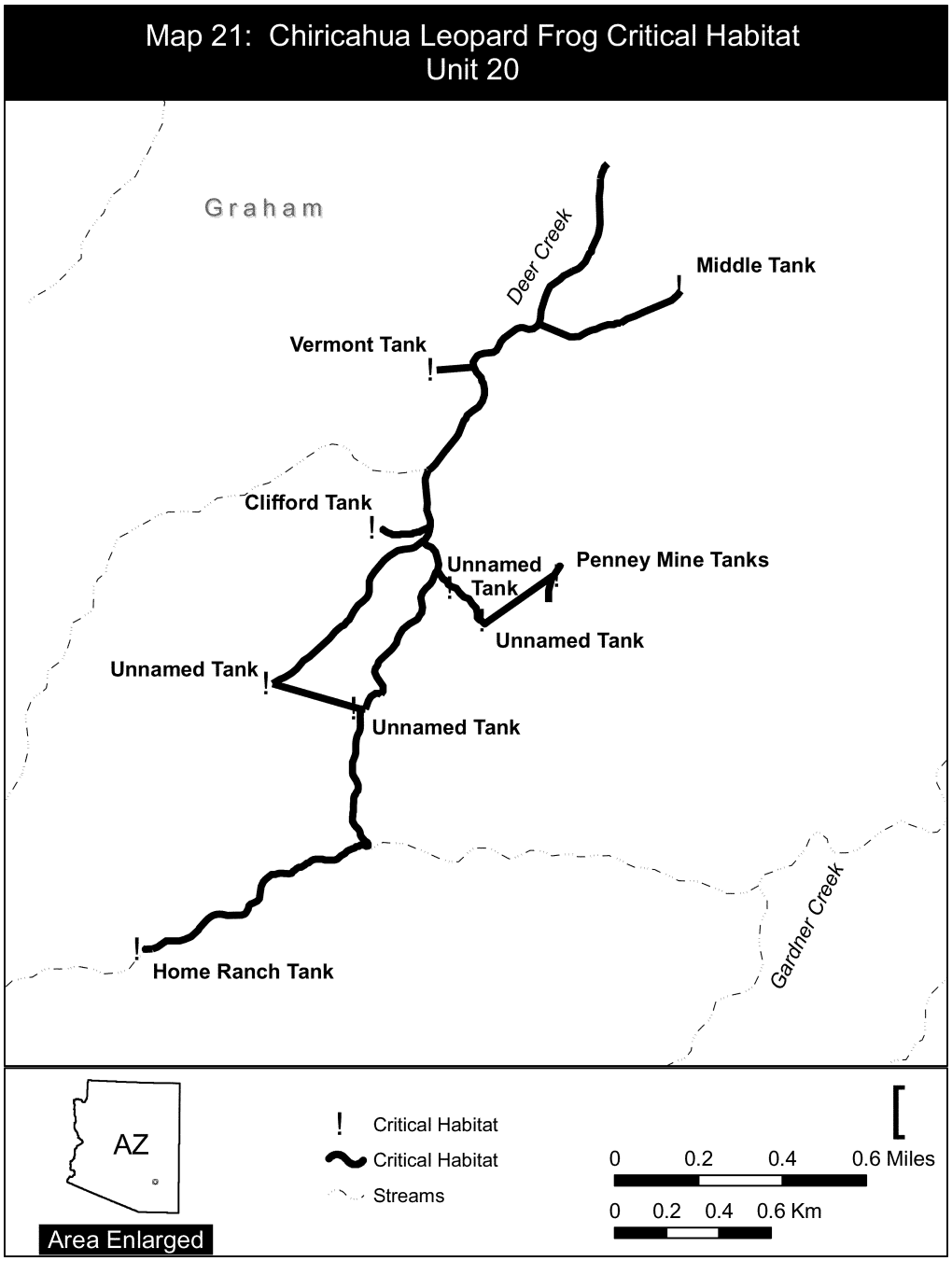
(vi) Deer Creek from a point where it exits a canyon and turns abruptly to the east (32.683937 N, 110.255290 W) upstream to its confluence with an unnamed drainage (32.673318 N, 110.262748 W); then upstream in that drainage to a confluence with four other drainages (32.671318 N, 110.262600 W); then upstream from that confluence in the western drainage to Clifford Tank (32.67130 N, 110.264877 W); then upstream from that confluence in the west-central drainage to an unnamed tank (32.666108 N, 110.269204 W); then directly overland southeast to another unnamed tank (32.665124 N, 110.265580 W); then downstream from that tank in an unnamed drainage to the aforementioned confluence (32.671318 N, 110.262600 W), and upstream in that unnamed drainage to a saddle (32.662529 N, 110.265717 W); then downstream from that saddle in an unnamed drainage to its confluence with an unnamed tributary to Gardner Creek (32.660409 N, 110.265303 W); and upstream in that unnamed tributary to Home Ranch Tank (32.656879 N, 110.274556 W), a distance of approximately 3.28 drainage miles (5.27 kilometers) and 1,216 feet (371 meters) overland.

(vii) From the largest of the Penney Mine Tanks (32.669696 N, 110.257652 W) directly overland to an unnamed tank (32.688150 N, 110.260309 W), and downstream in an unnamed drainage to the aforementioned confluence (32.671318 N, 110.262600 W), including another unnamed tank (32.669324 N, 110.261672 W) situated in that drainage, a distance of approximately 948 drainage feet (289 meters) and 1,051 feet (320 meters) overland.

(viii) From Vermont Tank (32.676883 N, 110.262404 W) directly overland for approximately 468 feet (143 meters) to Deer Creek (32.677037 N, 110.260815 W).

(ix) From Middle Tank (32.679691 N, 110.252180 W) upstream in an unnamed drainage to a saddle (32.677989 N, 110.256915 W), then directly downslope to Deer Creek (32.678307 N, 110.258257 W), an approximate drainage distance of 1,530 feet (466 meters) and 436 feet (133 meters) overland.

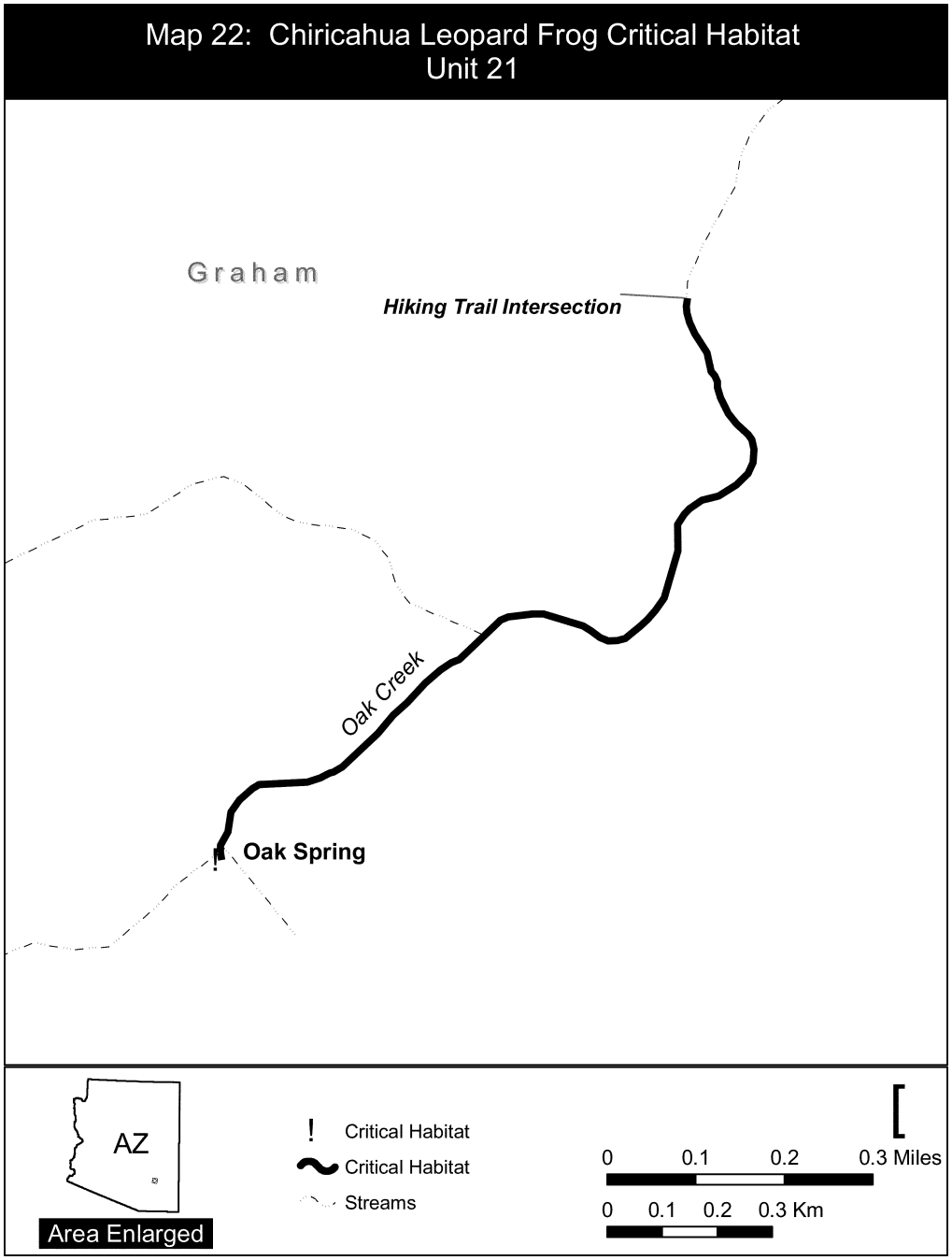
(x) *Note:* Map of Unit 20, Deer Creek (Map 21), follows:



(26) Unit 21: Oak Spring and Oak Creek, Graham County, Arizona.

(i) Oak Creek from Oak Spring (32.673538 N, 110.293214 W) downstream to where a hiking trail intersects the creek (32.682618 N, 110.283915 W), an approximate stream distance of 1.06 miles (1.71 kilometers).

(ii) *Note:* Map of Unit 21, Oak Spring and Oak Creek (Map 22), follows:



(27) Unit 22: Dragoon Mountains, Cochise County, Arizona.

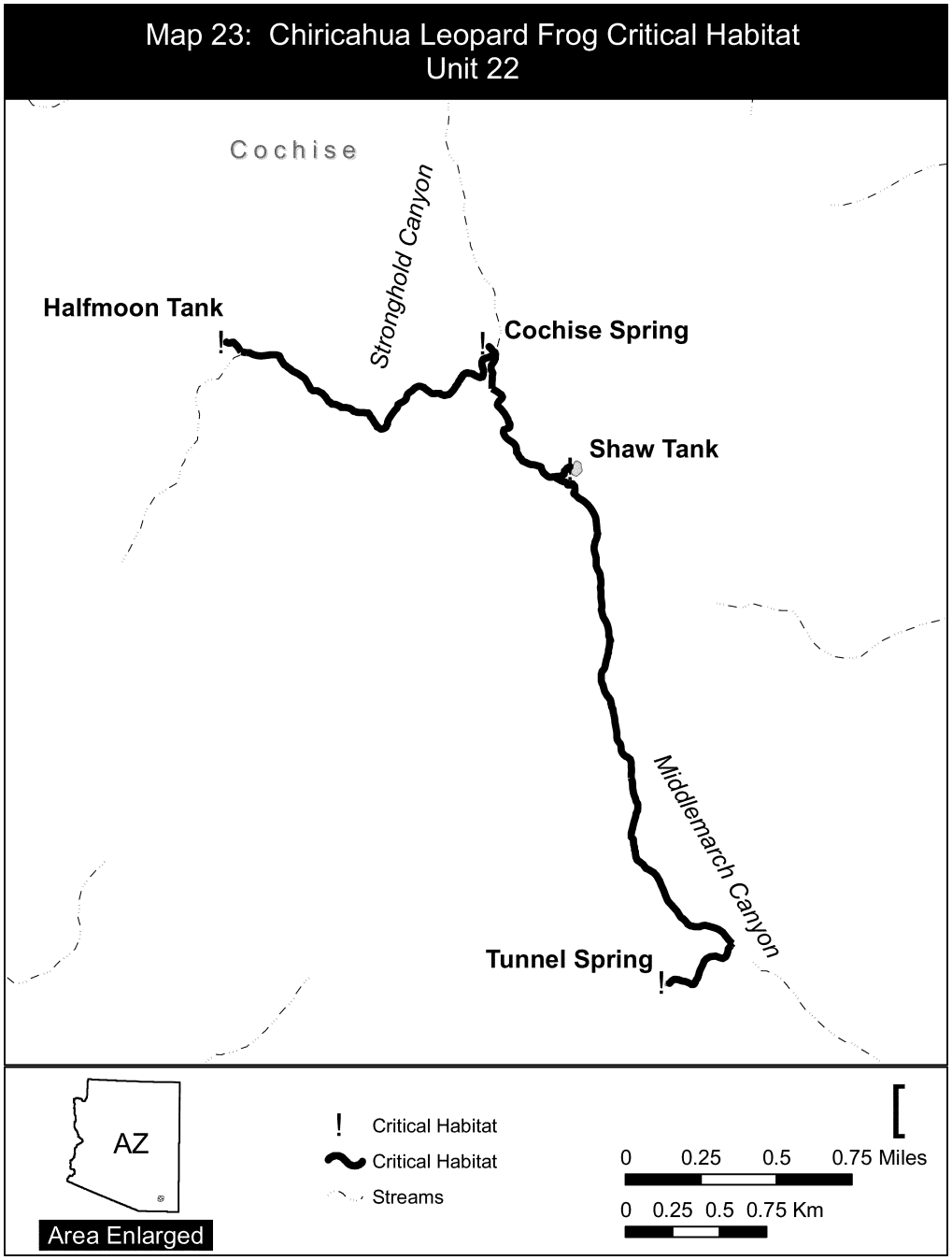
(i) Shaw Tank (31.906230 N, 109.958350 W).

(ii) Tunnel Spring (31.881018 N, 109.948182 W).

(iii) Halfmoon Tank (31.912453 N, 109.977963 W).

(iv) Stronghold Canyon from Halfmoon Tank (31.912453 N, 109.977963 W) downstream to Cochise Spring (31.912026 N, 109.963266 W), then upstream in an unnamed canyon to Shaw Tank (31.906230 N, 109.958350 W), and continuing upstream to the headwaters of that unnamed canyon (31.898491 N, 109.956589 W), then across a saddle and directly downslope to Middlemarch Canyon (31.894591 N, 109.956429 W), downstream in Middlemarch Canyon to its confluence with an unnamed drainage (31.883322 N, 109.949925 W), then upstream in that drainage to Tunnel Spring (31.881018 N, 109.948182 W), an approximate distance of 3.71 drainage miles (5.97 kilometers) and 1,300 feet (396 meters) overland.

(v) *Note:* A Map of Unit 22, Dragoon Mountains (Map 23), follows:



(28) Unit 23: Buckskin Hills, Yavapai County, Arizona.

(i) Sycamore Basin Tank (34.481619 N, 111.641676 W).

(ii) Middle Tank (34.473076 N, 111.624488 W).

(iii) Walt's Tank (34.455959 N, 111.638497 W).

(iv) Partnership Tank (34.452241 N, 111.646271 W).

(v) Black Tank (34.462968 N, 111.623554 W).

(vi) Buckskin Tank (34.472660 N, 111.652468 W).

(vii) Doren's Defeat Tank (34.446271 N, 111.641269 W).

(viii) Needed Tank (34.461023 N, 111.631271 W).

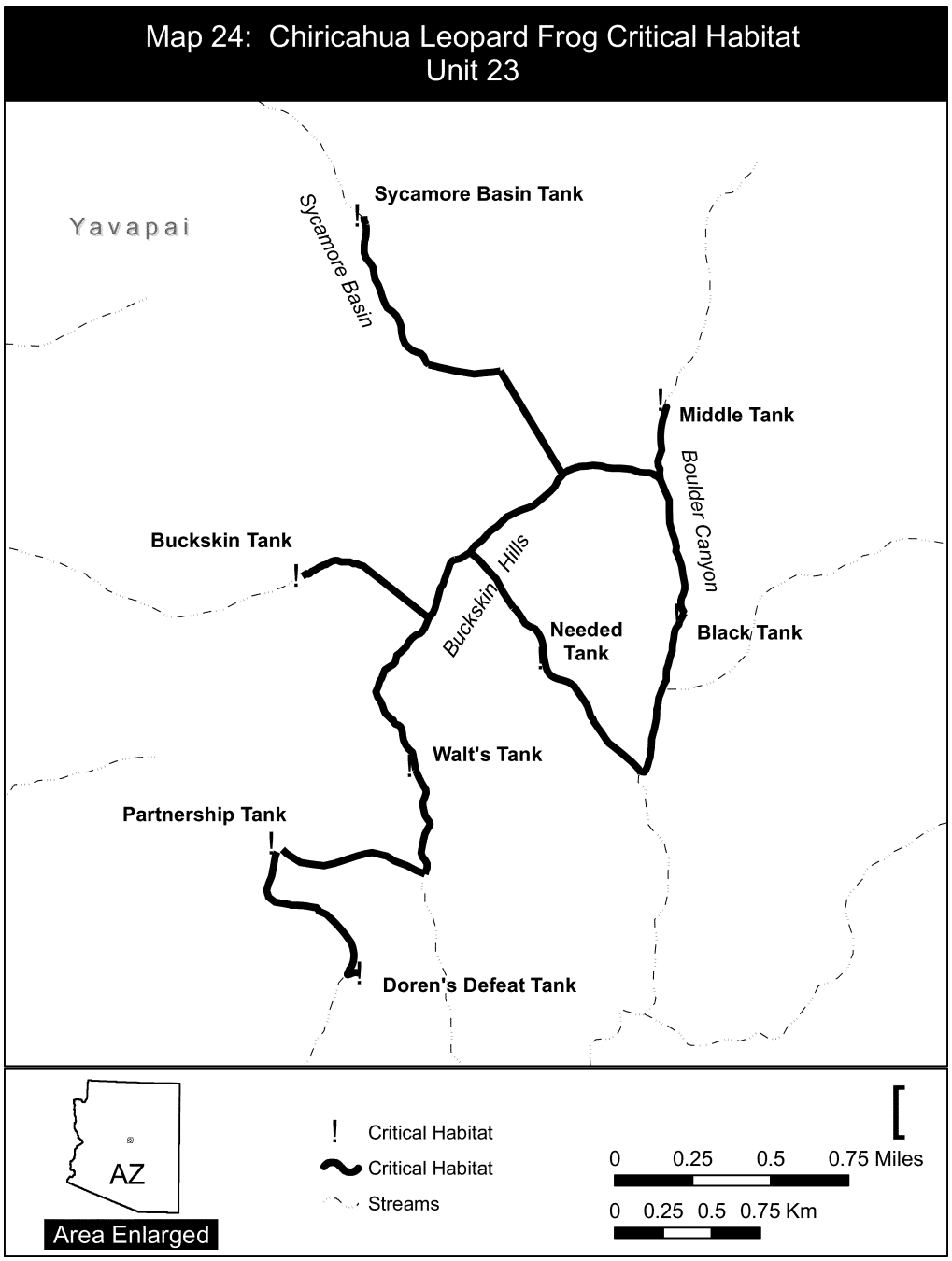
(ix) From Middle Tank (34.473076 N, 111.624488 W) downstream in Boulder Canyon to its confluence with an unnamed drainage that comes in from the northwest (34.455688 N, 111.625895 W), to include Black Tank (34.462968 N, 111.623554 W); then upstream in that unnamed drainage to a saddle (34.464120 N, 111.633633 W), to include Needed Tank (34.461023 N, 111.631271 W); then downstream from the saddle in an unnamed drainage to its confluence with another unnamed drainage (34.466209 N, 111.636096); then downstream in that drainage to the confluence with an unnamed drainage (34.450688 N, 111.638111 W), to include Walt's Tank (34.455959 N, 111.638497 W), and upstream in that unnamed drainage to Partnership Tank (34.452241 N, 111.646271 W); then upstream from the aforementioned confluence (34.466209 N, 111.636096) in the unnamed drainage that includes Walt's Tank to a point where the drainage turns east towards Boulder Canyon (34.469911 N, 111.630080 W), an approximate distance of 3.65 drainage miles (5.87 kilometers) and 425 feet (130 meters) overland.

(x) From Doren's Defeat Tank (34.446271 N, 111.641269 W) upstream in an unnamed drainage to Partnership Tank (34.452241 N, 111.646271 W), an approximate drainage distance of 3,310 feet (1,009 meters).

(xi) From the confluence of an unnamed drainage with Boulder Canyon (34.469515 N, 111.624979 W) west to a point where the drainage turns southwest (34.469911 N, 111.630080 W), then directly overland to the top of Sycamore Basin (34.473970 N, 111.633584 W), and then downstream in Sycamore Basin to Sycamore Basin Tank (34.481619 N, 111.641676 W), an approximate distance of 4,658 drainage feet (1,420 meters) and 1,827 feet (557 meters) overland.

(xii) From Buckskin Tank upstream in an unnamed drainage to the top of that drainage (34.465121 N, 111.641428 W), then directly overland to an unnamed drainage (34.462851 N, 111.637797 W) that contains Walt's Tank, an approximate distance of 1,109 drainage feet (338 meters) and 1,429 feet (435 meters) overland.

(xiii) *Note:* Map of Unit 23, Buckskin Hills (Map 24), follows:



(29) Unit 24: Crouch, Gentry, and Cherry Creeks, and Parallel Canyon, Gila County, Arizona.

(i) Trail Tank (34.176747 N, 110.812383 W).

(ii) HY Tank (34.148580 N, 110.831331 W).

(iii) Carroll Spring (34.133090 N, 110.838673 W).

(iv) West Prong of Gentry Creek from the confluence with an unnamed drainage (34.133243 N, 110.827755 W) downstream to a point (34.123475 N, 110.827872 W) where the creek turns southwest and is directly east of a saddle, then west overland across that saddle to Cunningham Spring (34.121883 N, 110.841424 W), an approximate distance of 3,837 drainage feet (1,169 meters) and 1,883 feet (574 meters) overland.

(v) Pine Spring (34.148580 N, 110.831331 W).

(vi) Bottle Spring (34.145180 N, 110.837515 W).

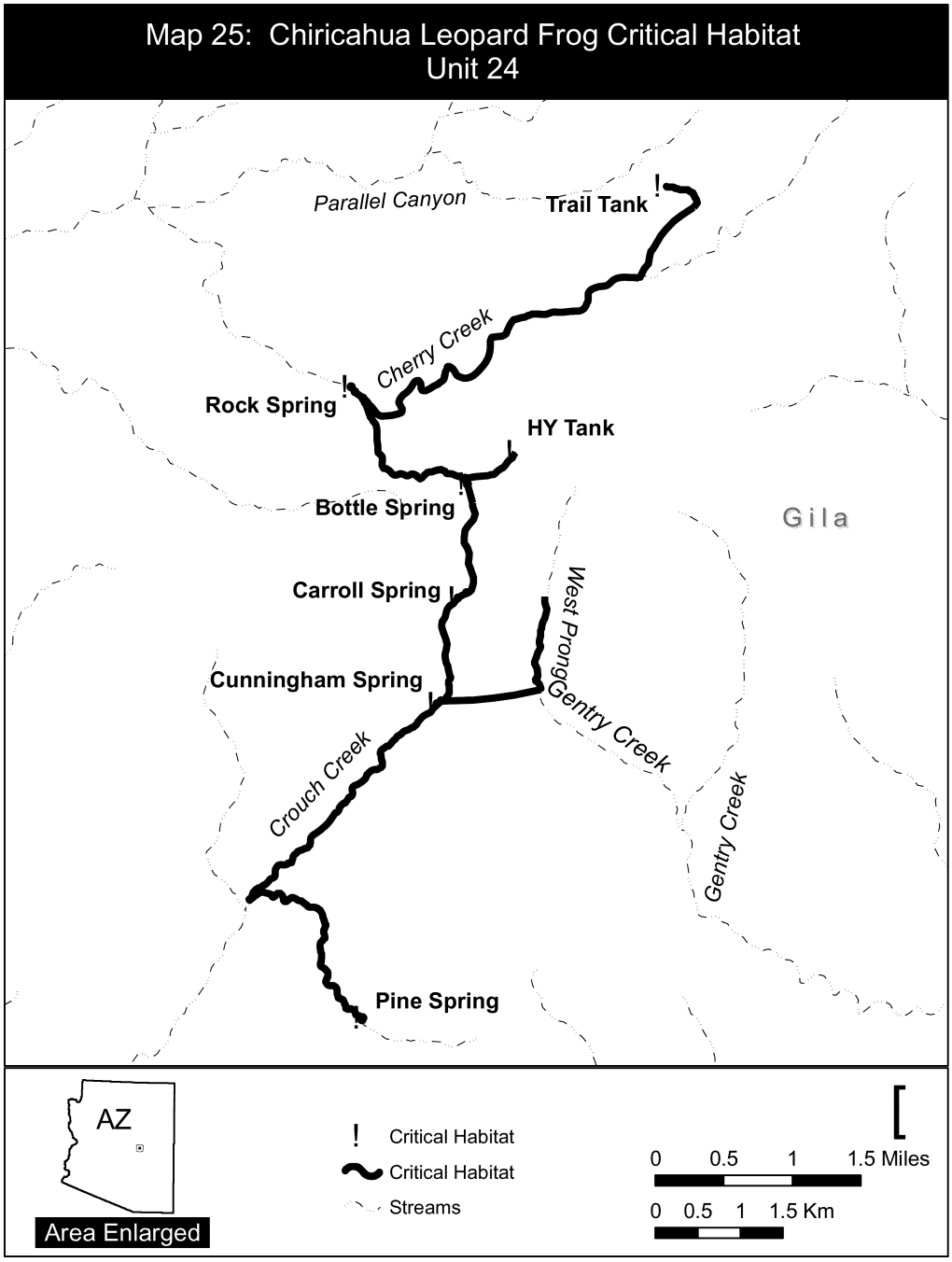
(vii) Cherry Creek from Rock Spring (34.155505 N, 110.852478 W) upstream to its confluence with an unnamed drainage (34.166956 N, 110.815587 W), then upstream in that drainage and across a saddle (34.176129 N, 110.808920 W), then downstream in an unnamed drainage to Trail Tank (34.176747 N, 110.812383 W), an approximate distance of 3.77 drainage miles (6.07 kilometers) and 975 feet (297 meters) overland.

(viii) Crouch Creek from its headwaters just south of Highway 288 (34.143151 N, 110.836876 W) downstream to an unnamed drainage leading to Pine Spring (34.102235 N, 110.864341 W), to include Cunningham Spring and Carroll Spring; then upstream in that unnamed drainage from Crouch Creek to Pine Spring (34.148580 N, 110.831331 W), an approximate drainage distance of 5.48 miles (8.82 kilometers).

(ix) From HY Tank (34.176747 N, 110.812383 W) downstream in an unnamed drainage to its confluence with Cherry Creek (34.154309 N, 110.85077 W), to include Bottle Spring (34.145180 N, 110.837515 W), an approximate stream distance of 1.66 miles (2.67 kilometers).

(x) From Bottle Spring (34.145180 N, 110.837515 W) south over a low saddle to the headwaters of Crouch Creek (34.143151 N, 110.836876 W), an approximate distance of 762 feet (232 meters) overland.

(xi) *Note:* Map of Unit 24, Crouch, Gentry, and Cherry Creeks, and Parallel Canyon (Map 25), follows:



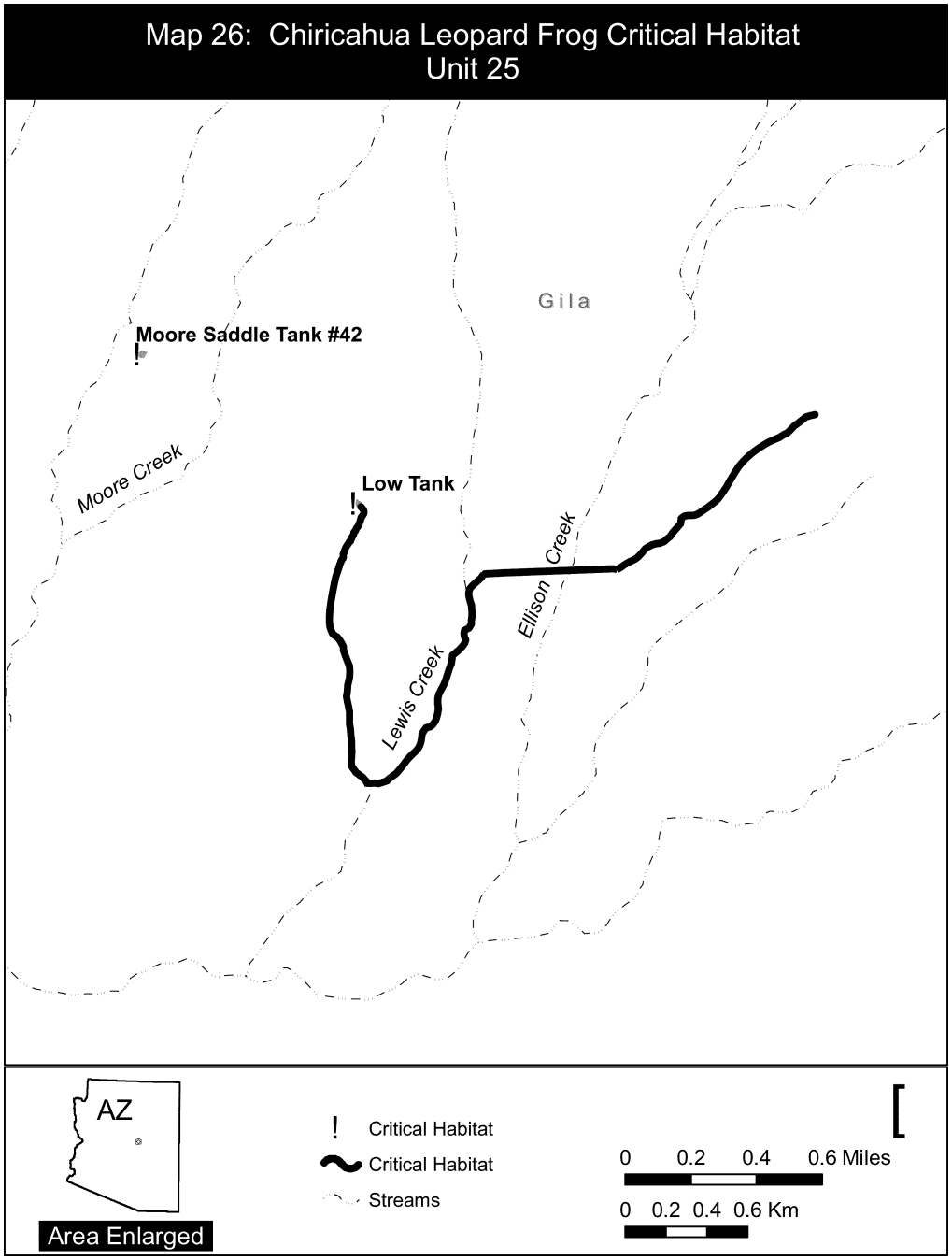
(30) Unit 25: Ellison and Lewis Creeks, Gila County, Arizona.

(i) Moore Saddle Tank #42 (34.374063 N, 111.205040 W).

(ii) Low Tank (34.36768 N, 111.19347 W).

(iii) Unnamed tributary to Ellison Creek from its confluence with an unnamed drainage (34.371458 N, 111.169111 W) downstream to Ellison Creek below Pyle Ranch (34.364667 N, 111.179966 W), then directly west across the Ellison Creek floodplain and over a low saddle to Lewis Creek below Pyle Ranch (34.364391 N, 111.186742 W), then downstream in Lewis Creek to its confluence with an unnamed drainage (34.354912 N, 111.192547 W), and then upstream in that unnamed drainage to Low Tank (34.36768 N, 111.19347 W), an approximate distance of 2.52 drainage miles (4.05 kilometers) and 1,070 feet (326 meters) overland.

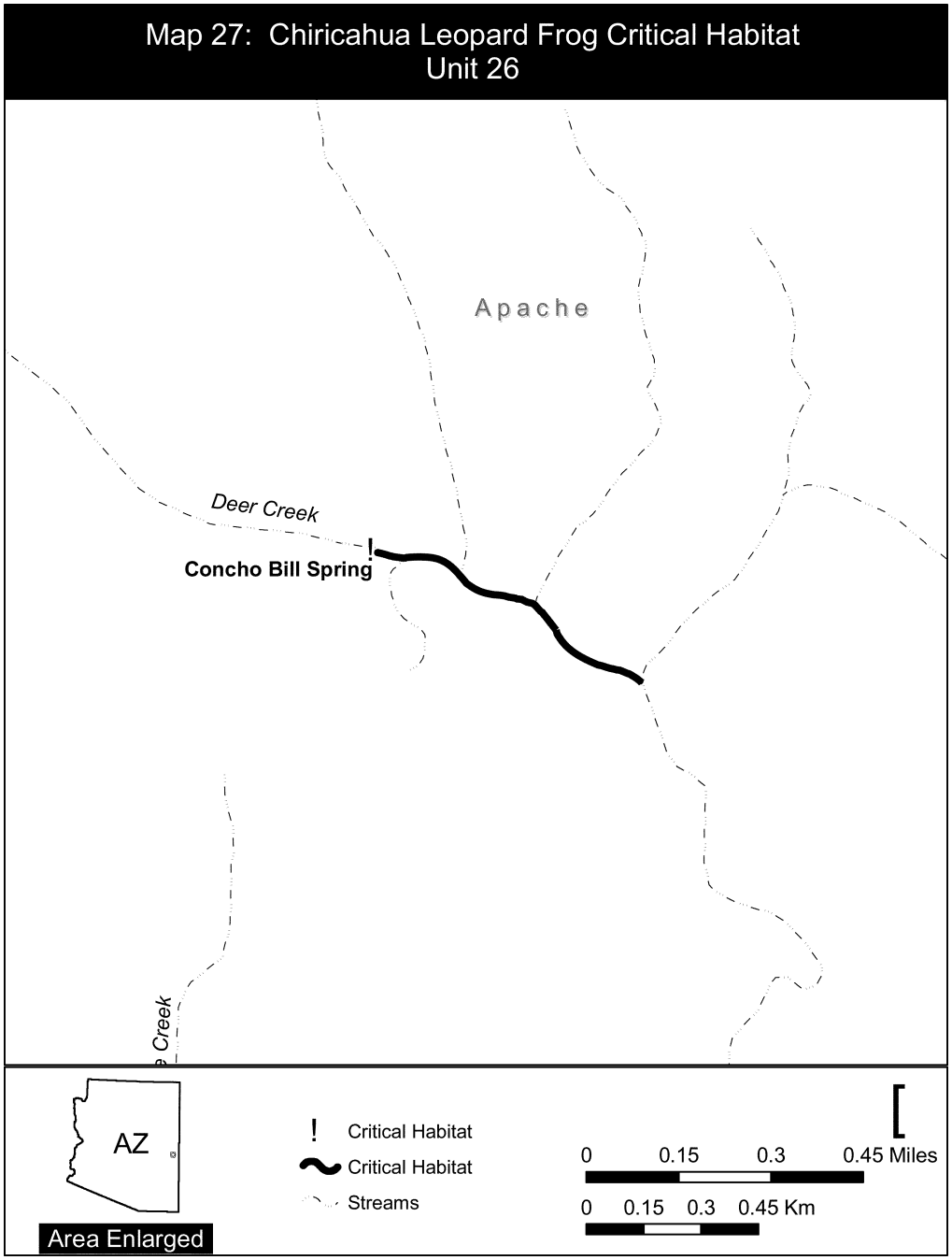
(iv) *Note:* Map of Unit 25, Ellison and Lewis Creeks (Map 26), follows:



(31) Unit 26: Concho Bill and Deer Creek, Apache County, Arizona.

(i) From Concho Bill Spring (33.830088 N, 109.366540 W) downstream in Deer Creek to its confluence with an unnamed drainage (33.827115 N, 109.359495 W), an approximate drainage distance of 2,667 feet (813 meters).

(ii) *Note:* Map of Unit 26, Concho Bill and Deer Creek (Map 27), follows:

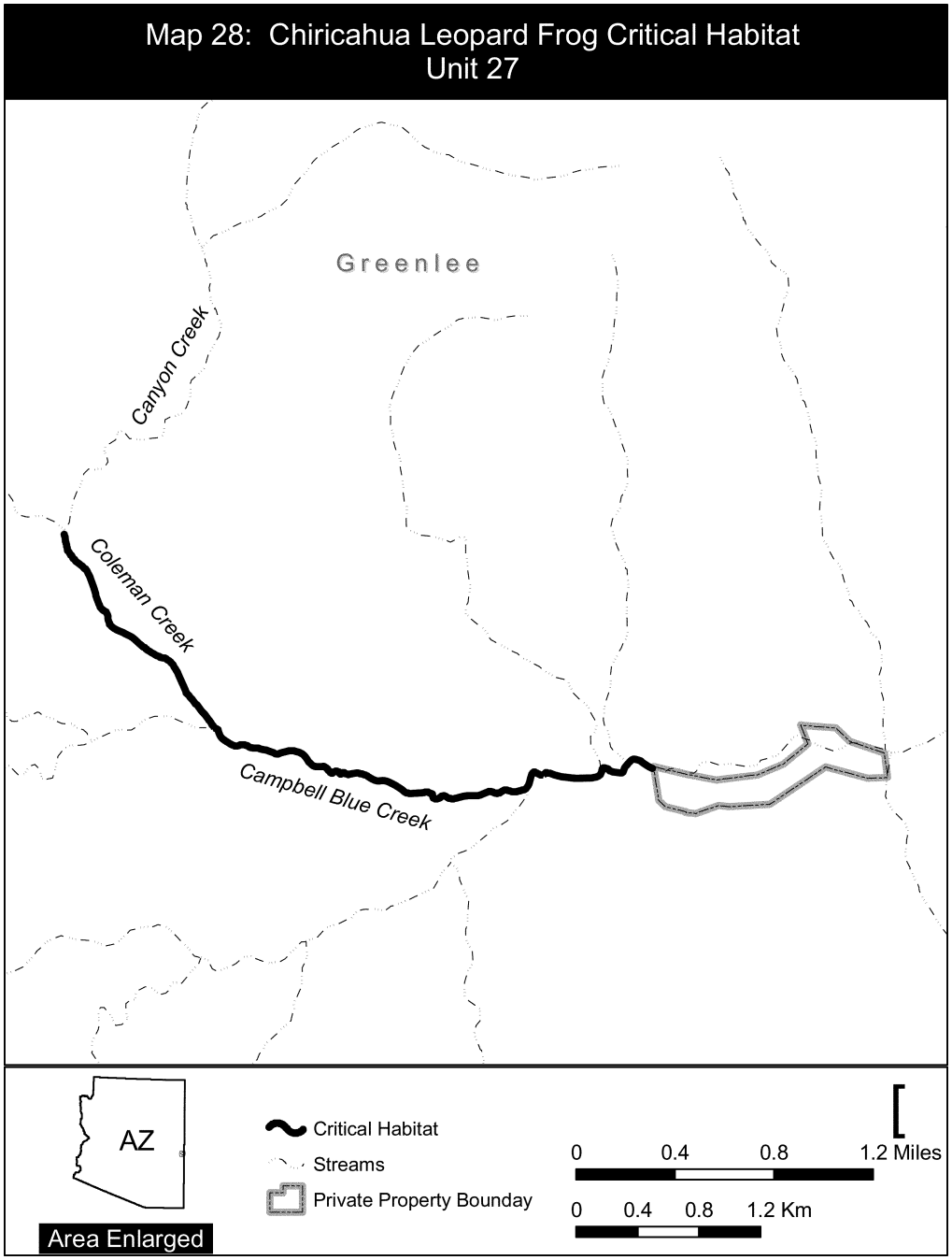


(32) Unit 27: Campbell Blue and Coleman Creeks, Greenlee County, Arizona.

(i) Campbell Blue Creek from the upstream boundary of Luce Ranch (33.735956 N, 109.127746 W) upstream to its confluence with Coalman Creek (33.738560 N, 109158679 W), an approximate stream distance of 2.04 miles (3.28 kilometers).

(ii) Coleman Creek from its confluence with Campbell Blue Creek (33.738560 N, 109158679 W) upstream to its confluence with Canyon Creek (33.750139 N, 109.168850 W), an approximate stream distance of 1.04 miles (1.68 kilometers).

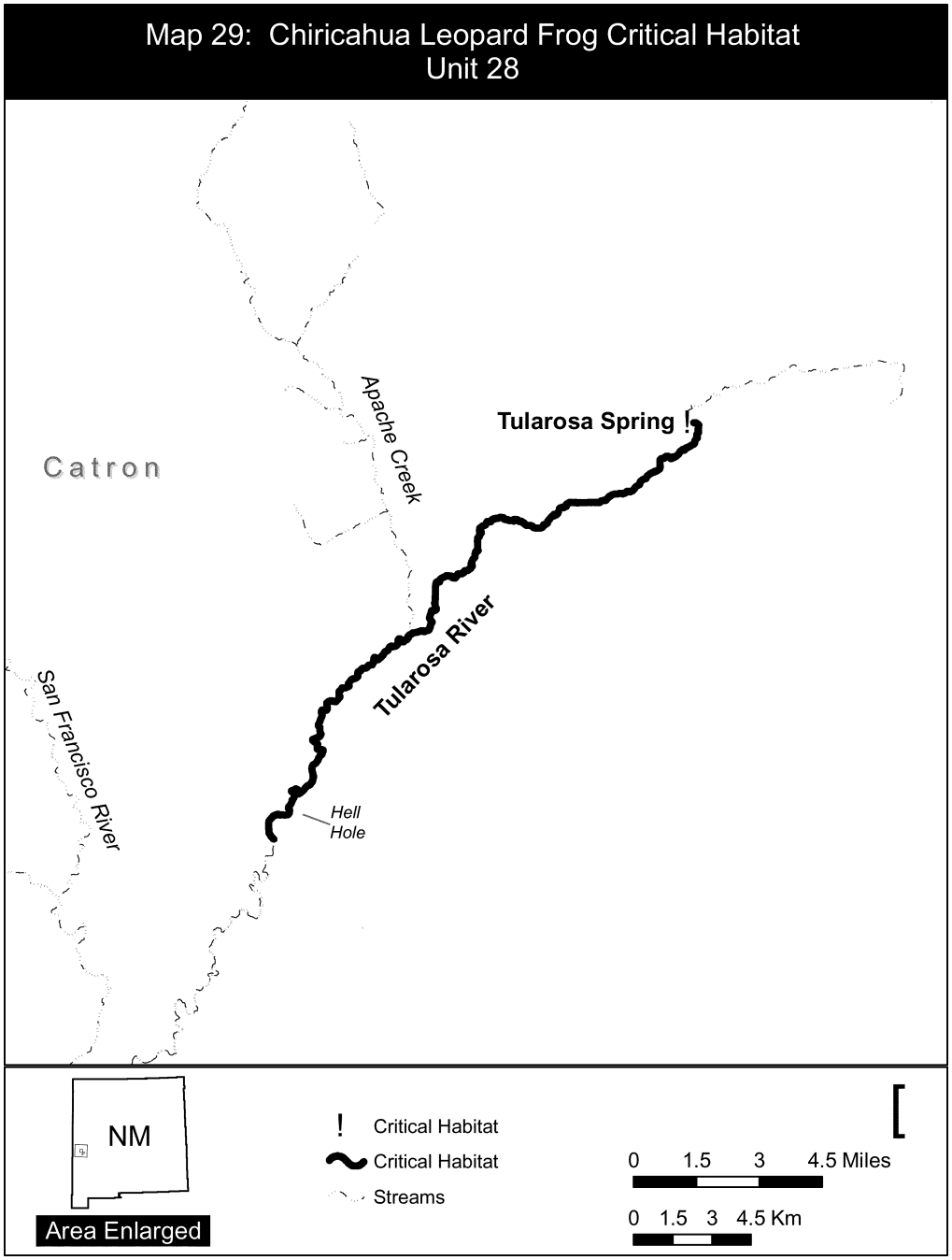
(iii) *Note:* Map of Unit 27, Campbell Blue and Coleman Creeks (Map 28), follows:



(33) Unit 28: Tularosa River, Catron County, New Mexico.

(i) Tularosa River from the upper end of Tularosa Spring (33.903798 N, 108.501926 W) downstream to the entrance to the canyon downstream of Hell Hole (33.762737 N, 108.681551 W), an approximate river distance of 19.31 miles (31.08 kilometers).

(ii) *Note:* Map of Unit 28, Tularosa River (Map 29), follows:



(34) Unit 29: Deep Creek Divide Area, Catron County, New Mexico.

(i) Long Mesa Tank (33.551664 N, 108.686841 W).

(ii) Cullum Tank (33.554864 N, 108.676961 W).

(iii) Burro Tank (33.571146 N, 108.638682 W).

(iv) North Fork of Negrito Creek from its confluence with South Fork of Negrito Creek (33.607082 N, 108.631340 W) upstream to its confluence with an unnamed drainage (33.612529 N, 108.614731 W), an approximate stream distance of 1.37 miles (2.20 kilometers).

(v) South Fork of Negrito Creek from its confluence with North Fork of Negrito Creek (33.607082 N, 108.631340 E) upstream to an impoundment (33.599047 N, 108.621300 W), including three other impoundments along the channel (33.601890 N, 108.622227 W; 33.602845 N, 108.622764 W; and 33.603810 N, 108.623971 W), an approximate stream distance of 4,821 feet (1,469 meters).

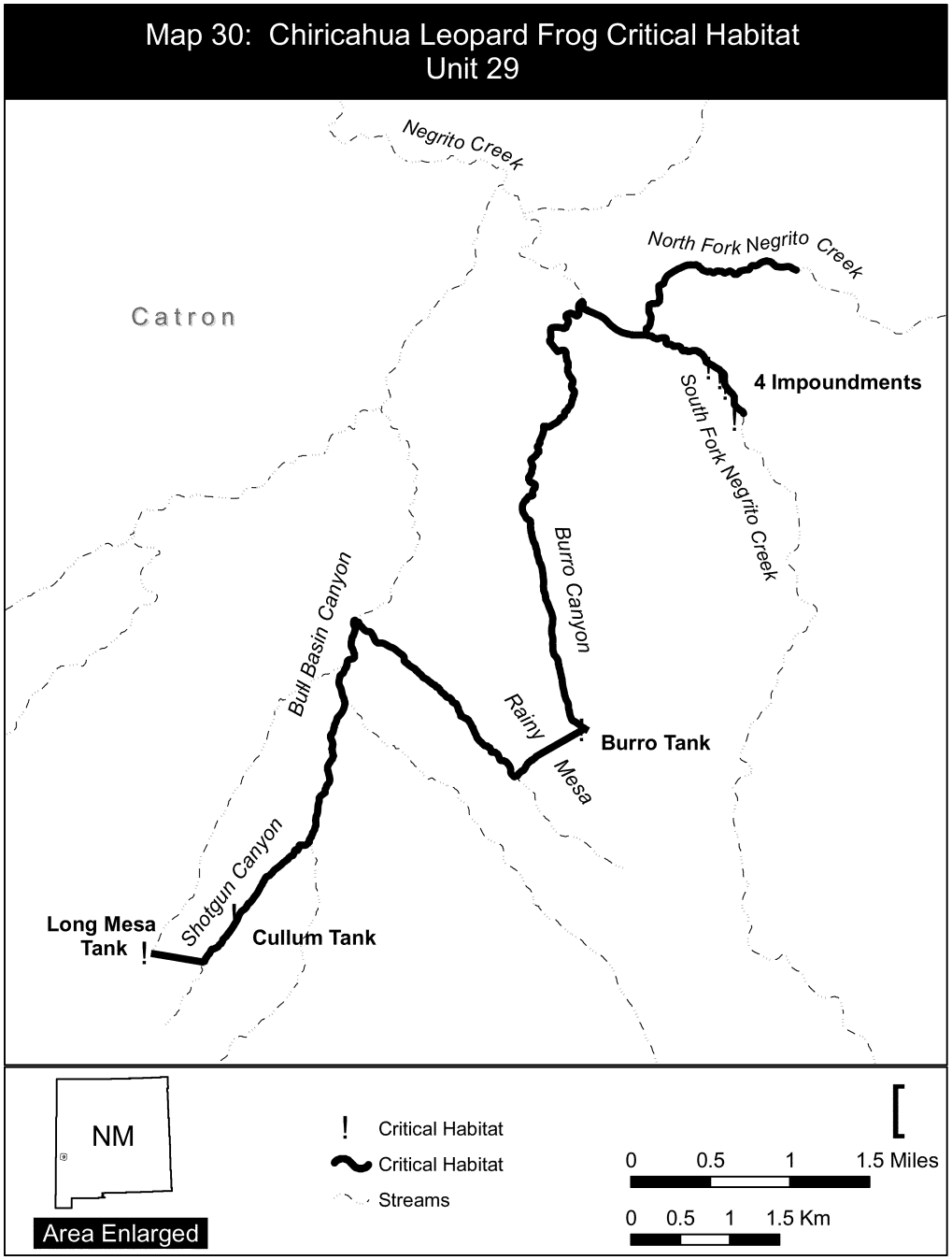
(vi) From Burro Tank (33.571146 N, 108.638682 W) downstream in Burro Canyon to Negrito Creek (22.609589 N, 108.638448 W), then upstream in Negrito Creek to the confluence of North and South Forks of Negrito Creeks (33.607082 N, 108.631340 W), an approximate stream distance of 3.80 miles (6.12 kilometers).

(vii) From Long Mesa Tank (33.551664 N, 108.686841 W) directly overland and east to Shotgun Canyon (33.550816 N, 108.681110 W), then downstream in that canyon to Cullum Tank (33.554864 N, 108.676961 W), an approximate distance of 2,003 drainage feet (610 meters) and 1,801 feet (549 meters) overland.

(viii) From Cullum Tank (33.554864 N, 108.676961 W) downstream in Shotgun and Bull Basin Canyons to a

confluence with an unnamed drainage (33.581626 N, 108.663624 W), then upstream in that drainage to the confluence with a minor drainage leading off Rainy Mesa from the east-northeast (33.567121 N, 108.646776 W), then upstream in that drainage and directly east-northeast across Rainy Mesa to Burro Tank (33.571146 N, 108.638682 W), an approximate distance of 3.88 drainage miles (6.24 kilometers) and 1,863 feet (568 meters) overland.

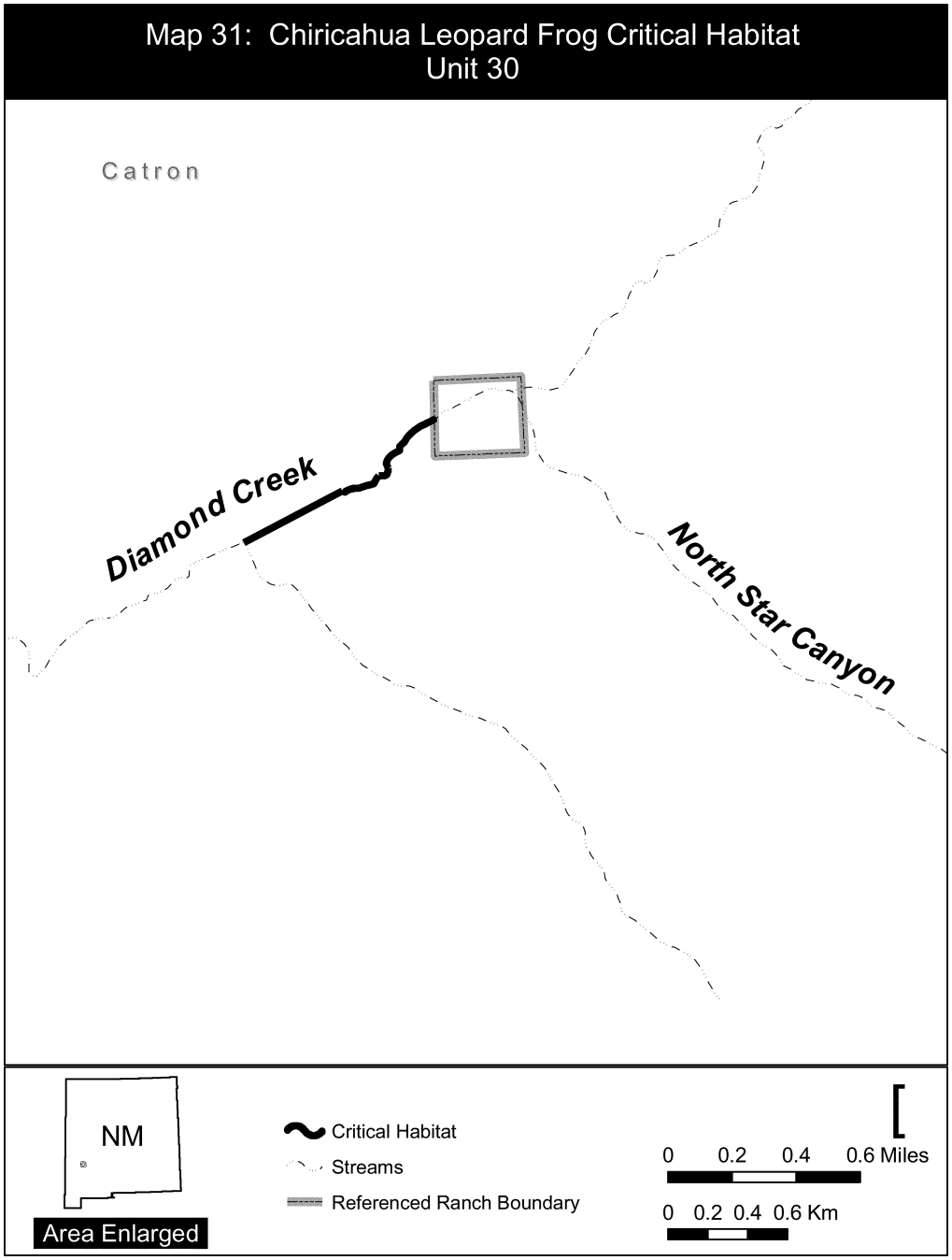
(ix) *Note:* Map of Unit 29, Deep Creek Divide Area (Map 30), follows:



(35) Unit 30: Main Diamond Creek, Catron County, New Mexico.

(i) Main Diamond Creek, from the downstream boundary of Links Ranch (33.269512 N, 108.105542 W) downstream to the confluence with an unnamed drainage that comes in from the south, which is also where Main Diamond Creek enters a canyon (33.264514 N, 108.116019 W), an approximate stream distance of 3,980 feet (1,213 meters).

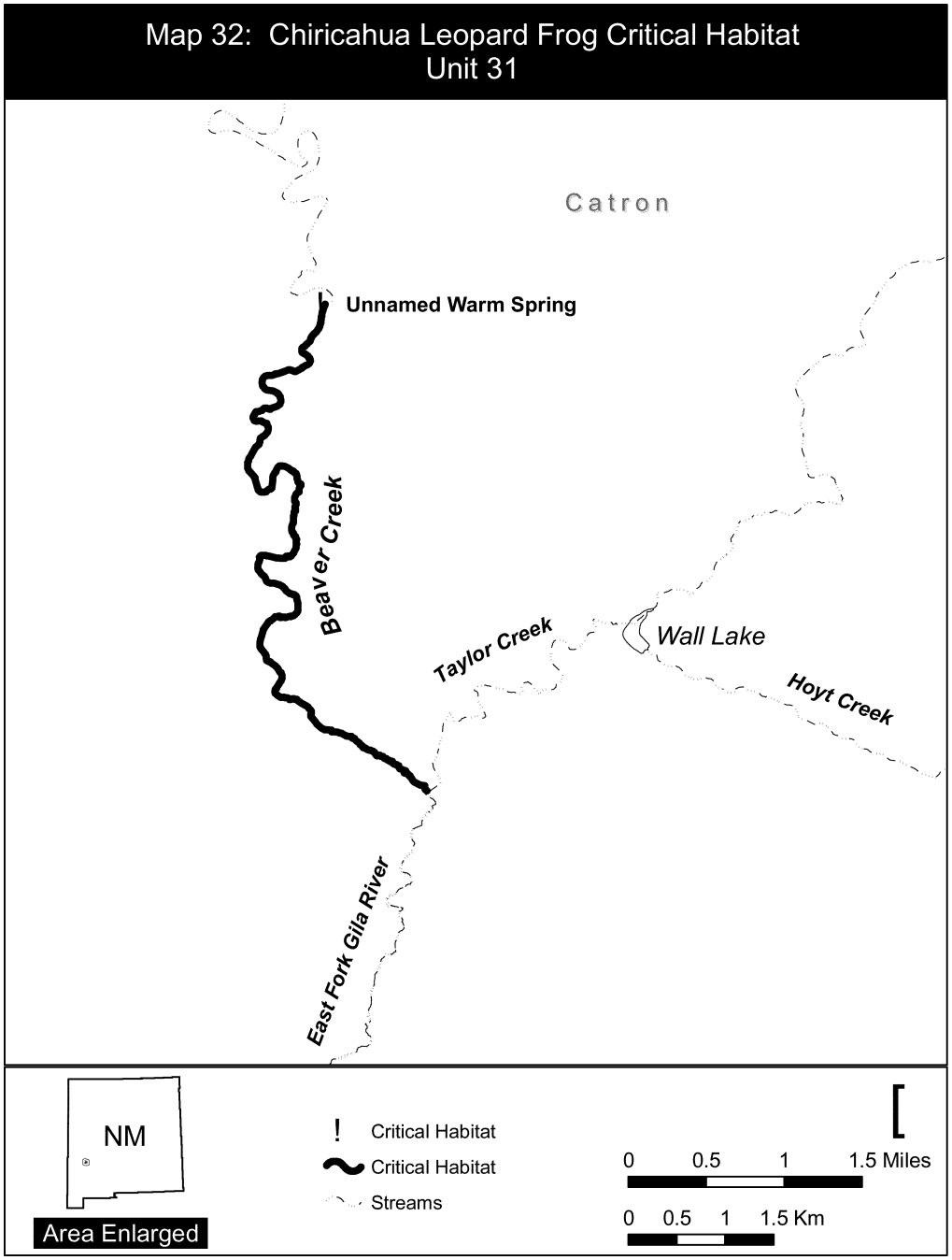
(ii) *Note:* Map of Unit 30, Main Diamond Creek (Map 31), follows:



(36) Unit 31: Beaver Creek, Catron County, New Mexico.

(i) Beaver Creek from an unnamed warm spring (33.380952 N, 108.111761 W) downstream to its confluence with Taylor Creek (33.334694 N, 108.101543 W), an approximate stream distance of 5.59 miles (8.89 kilometers).

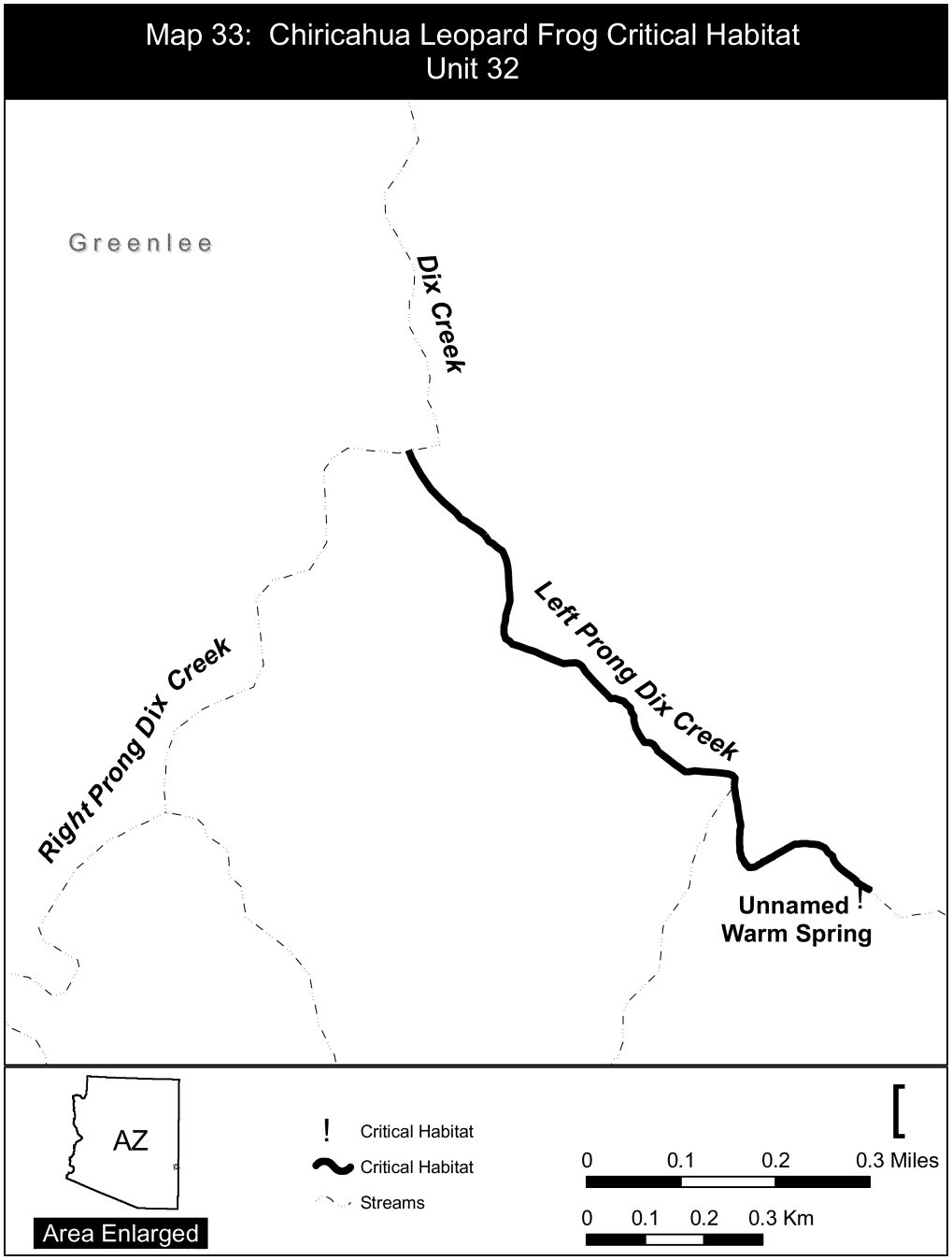
(ii) *Note:* Map of Unit 31, Beaver Creek (Map 32), follows:



(37) Unit 32: Left Prong of Dix Creek, Greenlee County, Arizona.

(i) Left prong of Dix Creek from an unnamed warm spring (33.179413 N, 109.149176 W) above "The Hole" downstream to its confluence with the right prong of Dix Creek (33.186657 N, 109.157754 W), an approximate stream distance of 4,248 feet (1,295 meters).

(ii) *Note:* Map of Unit 32, Left Prong of Dix Creek (Map 33), follows:



(38) Unit 33: Rattlesnake Pasture Tank and Associated Tanks, Greenlee County, Arizona.

(i) Rattlesnake Pasture Tank (33.093987 N, 109.151714 W).

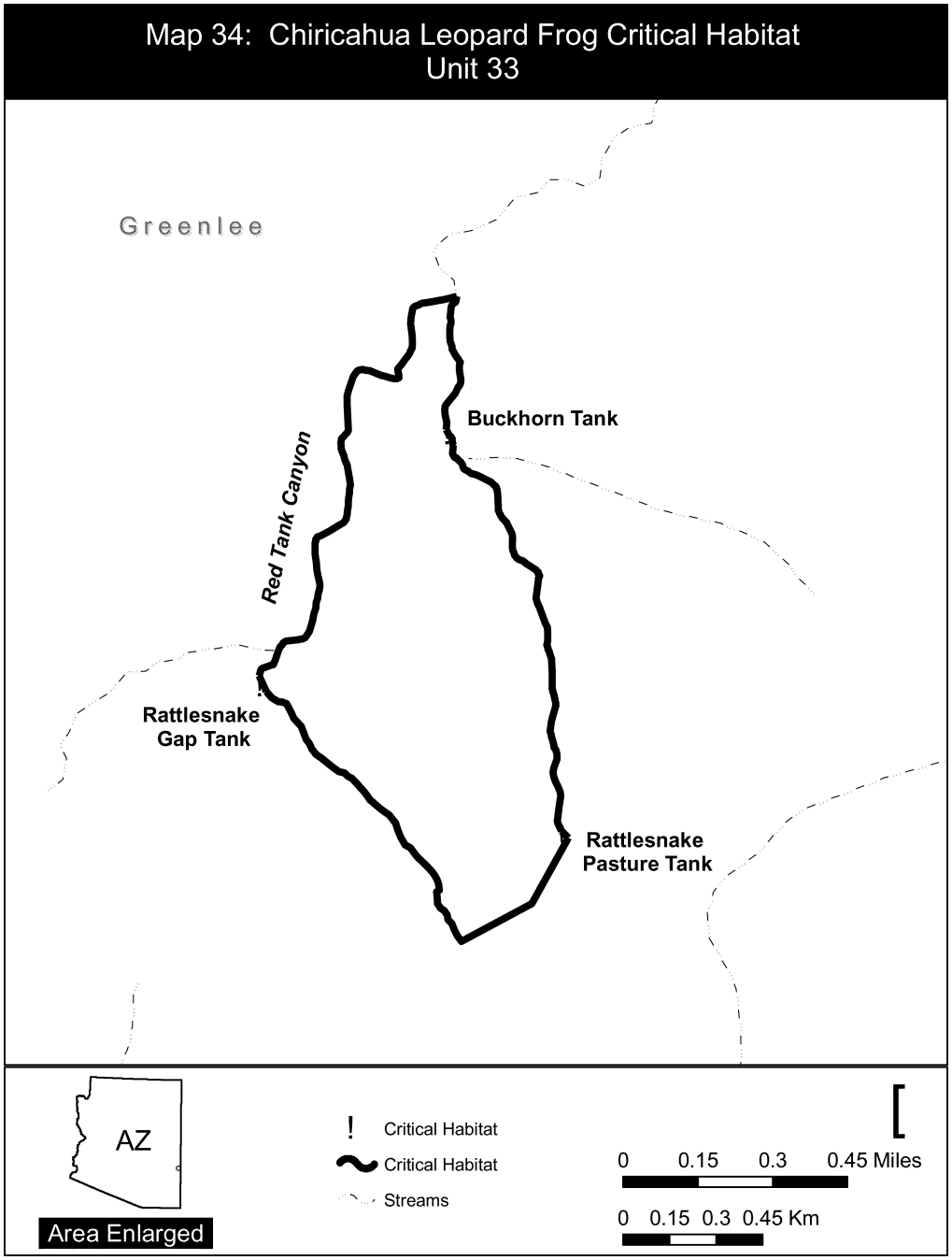
(ii) Rattlesnake Gap Tank (33.098497 N, 109.162152 W).

(iii) Buckhorn Tank (33.105613 N, 109.155506 W).

(iv) From Rattlesnake Pasture Tank (33.093987 N, 109.151714 W) downstream in an unnamed drainage to its confluence with Red Tank Canyon (33.109603 N, 109.155549 W), to include Buckhorn Tank (33.105613 N, 109.155506 W); then upstream in Red Tank Canyon to Rattlesnake Gap Tank (33.098497 N, 109.162152 W), an approximate drainage distance of 2.27 miles (3.65 kilometers).

(v) From Rattlesnake Gap Tank (33.098497 N, 109.162152 W) upstream in an unnamed drainage to its confluence with a minor drainage (33.090898 N, 109.155386 W), then directly upslope to a saddle (33.091771 N, 109.152380), and across that saddle and directly downslope to Rattlesnake Pasture Tank (33.093987 N, 109.151714 W), an approximate distance of 3,722 drainage feet (1,134 meters) and 1,645 feet (501 meters) overland.

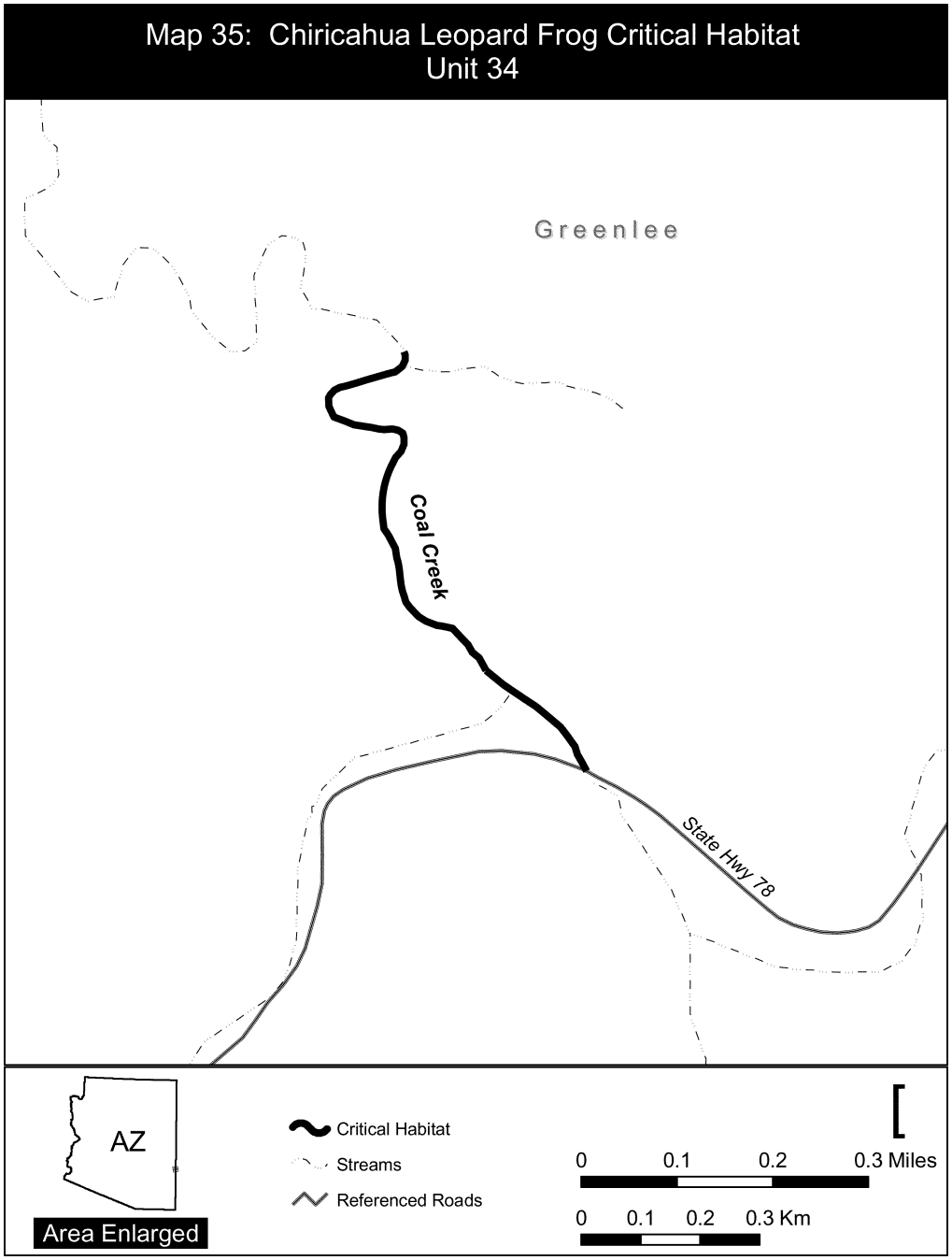
(vi) *Note:* Map of Unit 33, Rattlesnake Pasture Tank and Associated Tanks (Map 34), follows:



(39) Unit 34: Coal Creek, Greenlee County, Arizona.

(i) Coal Creek from the Highway 78 crossing (33.103667 N, 109.062458 W) downstream to the confluence with an unnamed drainage (33.110025 N, 109.065847 W), an approximate stream distance of 3,447 feet (1,051 meters).

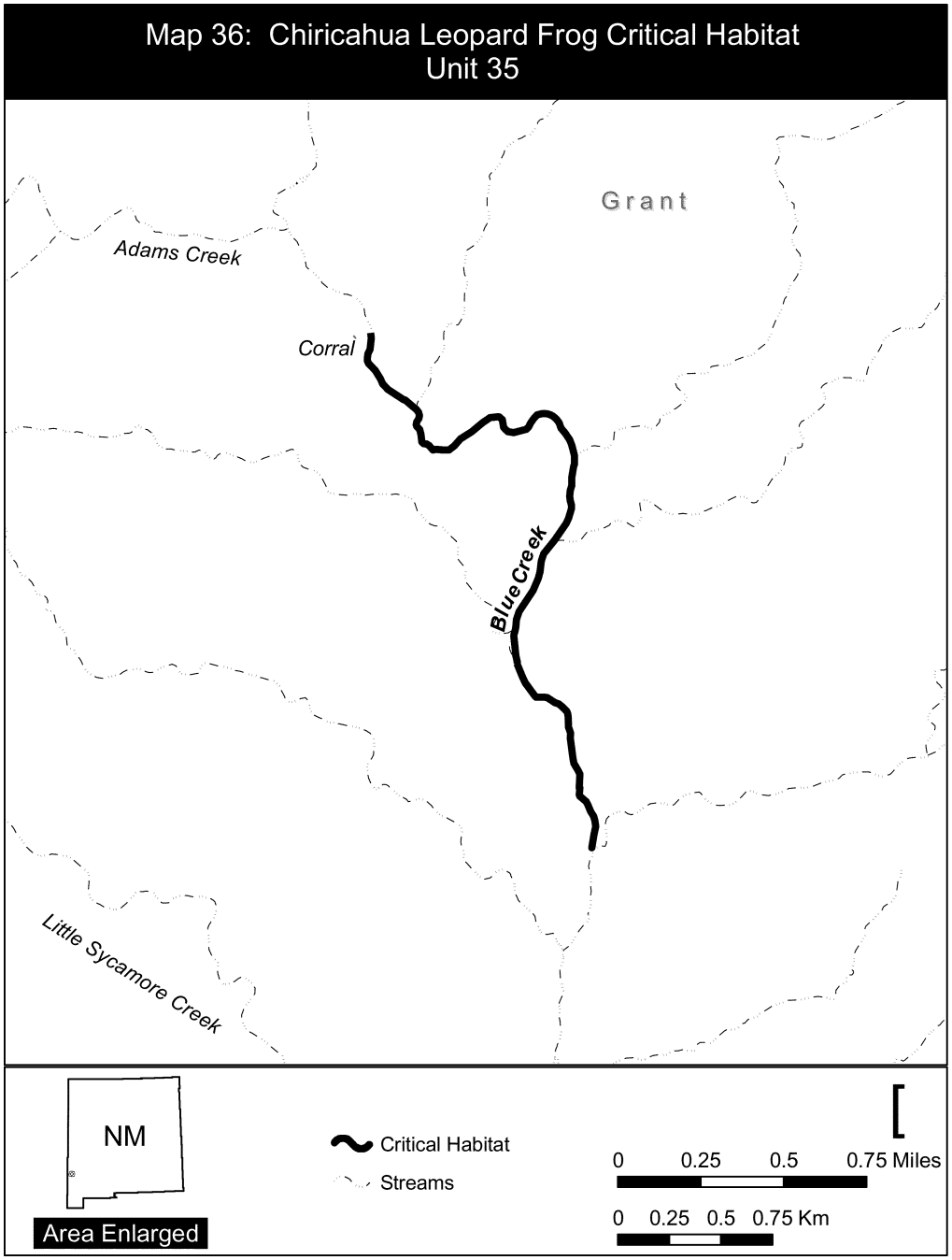
(ii) *Note:* Map of Unit 34, Coal Creek (Map 35), follows:



(40) Unit 35: Blue Creek, Grant County, New Mexico.

(i) Blue Creek from just east of a corral on private lands (32.848702 N, 108.835761 W) downstream to its confluence with an unnamed drainage that comes in from the east (32.825785 N, 108.824742 W), an approximate stream distance of 2.37 miles (3.81 kilometers).

(ii) *Note:* Map of Unit 35, Blue Creek (Map 36), follows:



(41) Unit 36: Seco Creek, Sierra County, New Mexico.

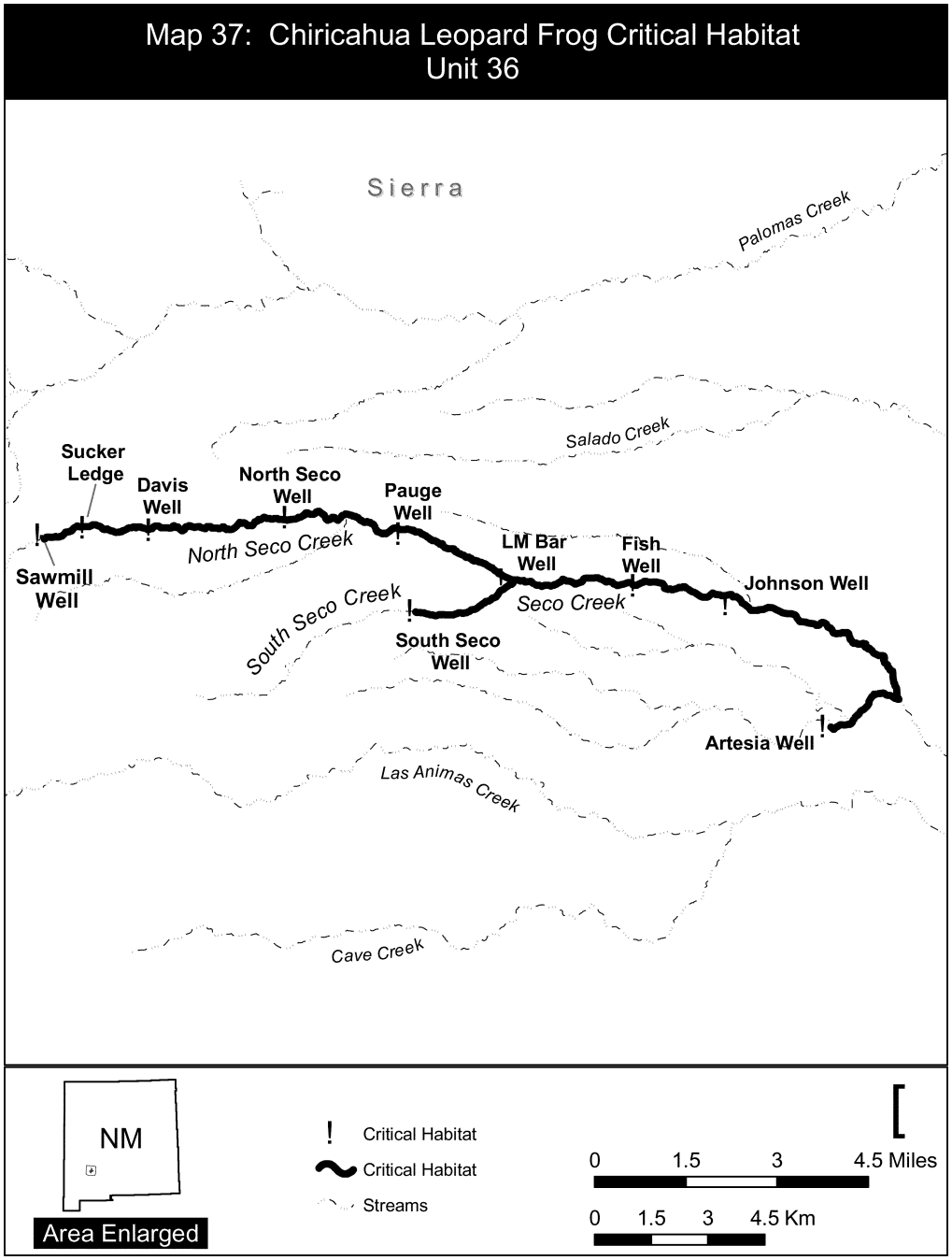
(i) North Seco Creek from Sawmill Well (33.112052 N, 107.760165 W) downstream to its confluence with South Seco Creek (33.097239 N, 107.624649 W), to include Sucker Ledge (33.113545 N, 107.747370 W), Davis Well (33.112421 N 107.728650 W), North Seco Well (33.114416 N, 107.689934 W), Pauge Well (33.109714 N, 107.657965 W), and LM Bar Well (33.097906 N, 107.629301 W), an approximate drainage distance of 8.93 miles (14.39 kilometers).

(ii) South Seco Creek from South Seco Well (33.091214 N, 107.655347 W) downstream to its confluence with the North Seco Creek (33.097239 N, 107.624649 W), an approximate drainage distance of 1.87 miles (3.01 kilometers).

(iii) Seco Creek from the confluence with North and South Seco creeks (33.097239 N, 107.624649 W) downstream to its confluence with Ash Creek (33.066837 N, 107.519939 W), to include Fish Well (33.095461 N, 107.592109 W) and Johnson Well (33.090439 N, 107.566035 W), an approximate drainage distance of 7.84 miles (12.62 kilometers).

(iv) Ash Creek from Artesia Well (33.060469 N, 107.539670 W) downstream to its confluence with Seco Creek (33.066660 N, 107.519804 W), an approximate drainage distance of 1.48 miles (2.38 kilometers).

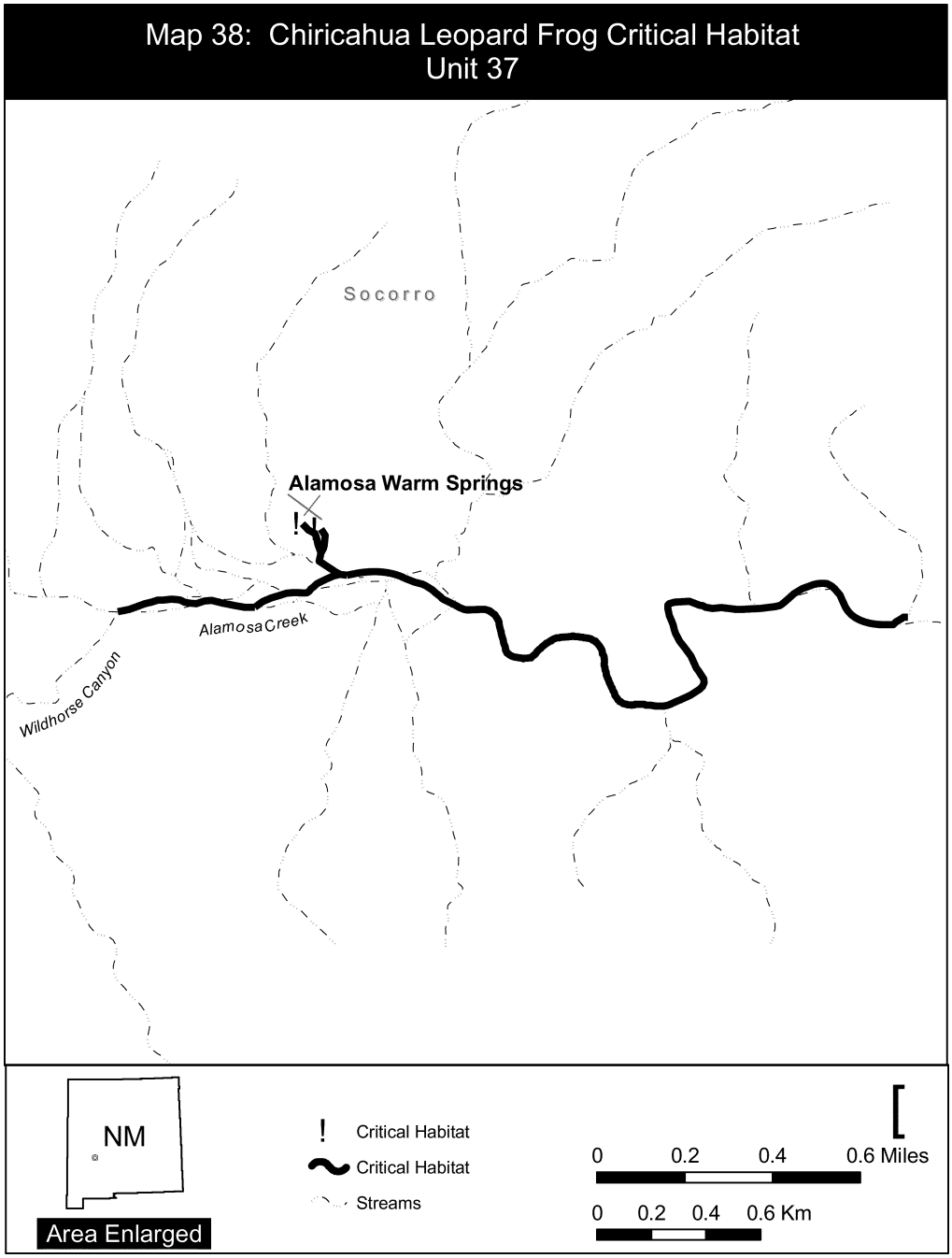
(v) *Note:* Map of Unit 36, Seco Creek (Map 37), follows:



(42) Unit 37: Alamosa Warm Springs, Socorro County, New Mexico.

(i) From the confluence of Wildhorse Canyon and Alamosa Creek (33.570315 N, 107.608474 W) downstream in Alamosa Creek to the confluence with an unnamed drainage that comes in from the north (33.569199 N, 107.577137 W), to include Alamosa Warm Springs (33.572365 N, 107.600153 W), an approximate stream distance of 4,974 feet (1,516 meters).

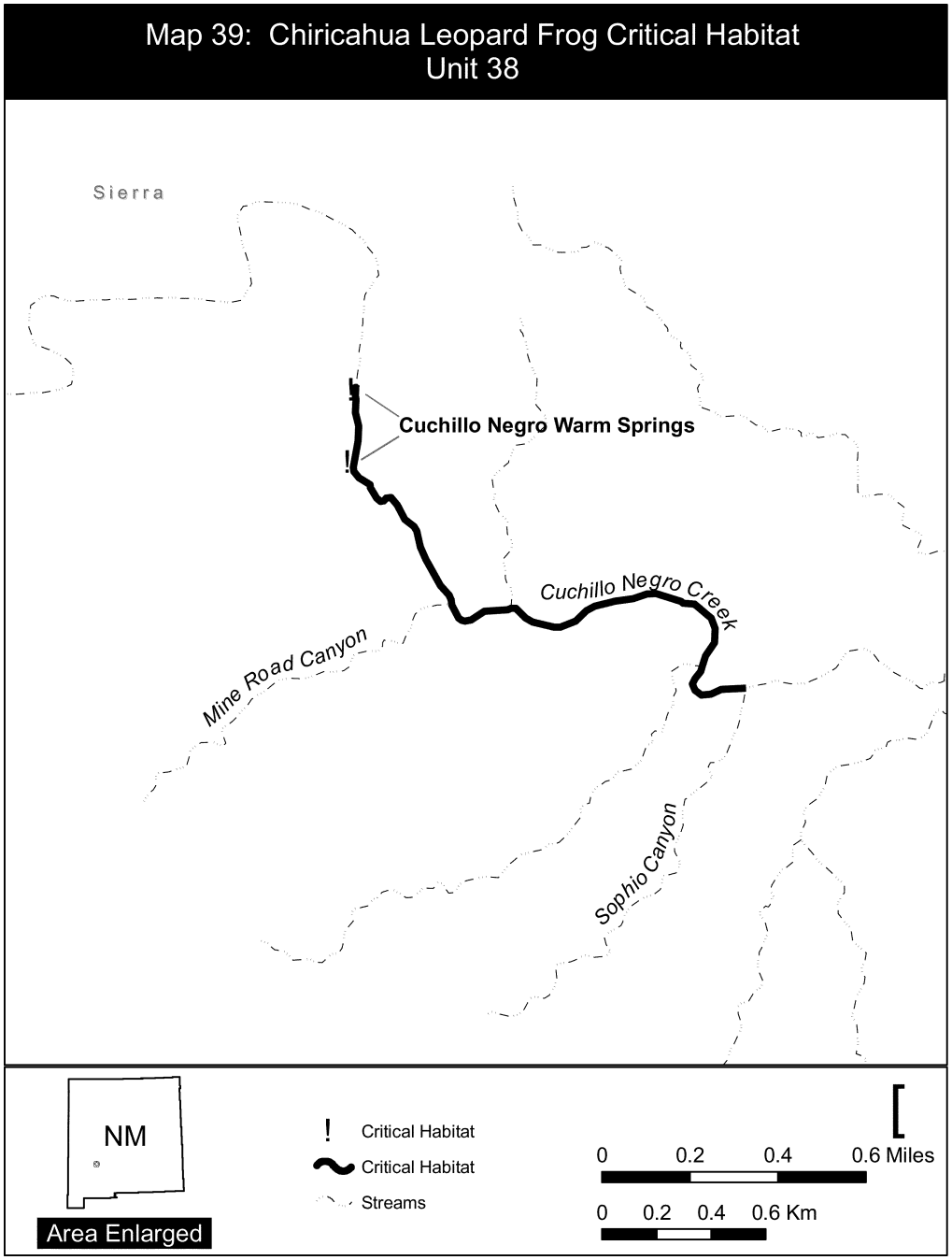
(ii) *Note:* Map of Unit 37, Alamosa Warm Springs (Map 38), follows:



(43) Unit 38: Cuchillo Negro Warm Springs and Creek, Sierra County, New Mexico.

(i) From the upper of the two Cuchillo Negro Warm Springs (33.268403 N, 107.563619 W) downstream in Cuchillo Negro Creek to its confluence with Sophio Canyon (33.268403 N, 107.548630 W), an approximate stream distance of 1.58 miles (2.54 kilometers).

(ii) *Note:* Map of Unit 38, Cuchillo Negro Warm Springs (Map 39), follows:



(44) Unit 39: Ash and Bolton Springs, Grant County, New Mexico.

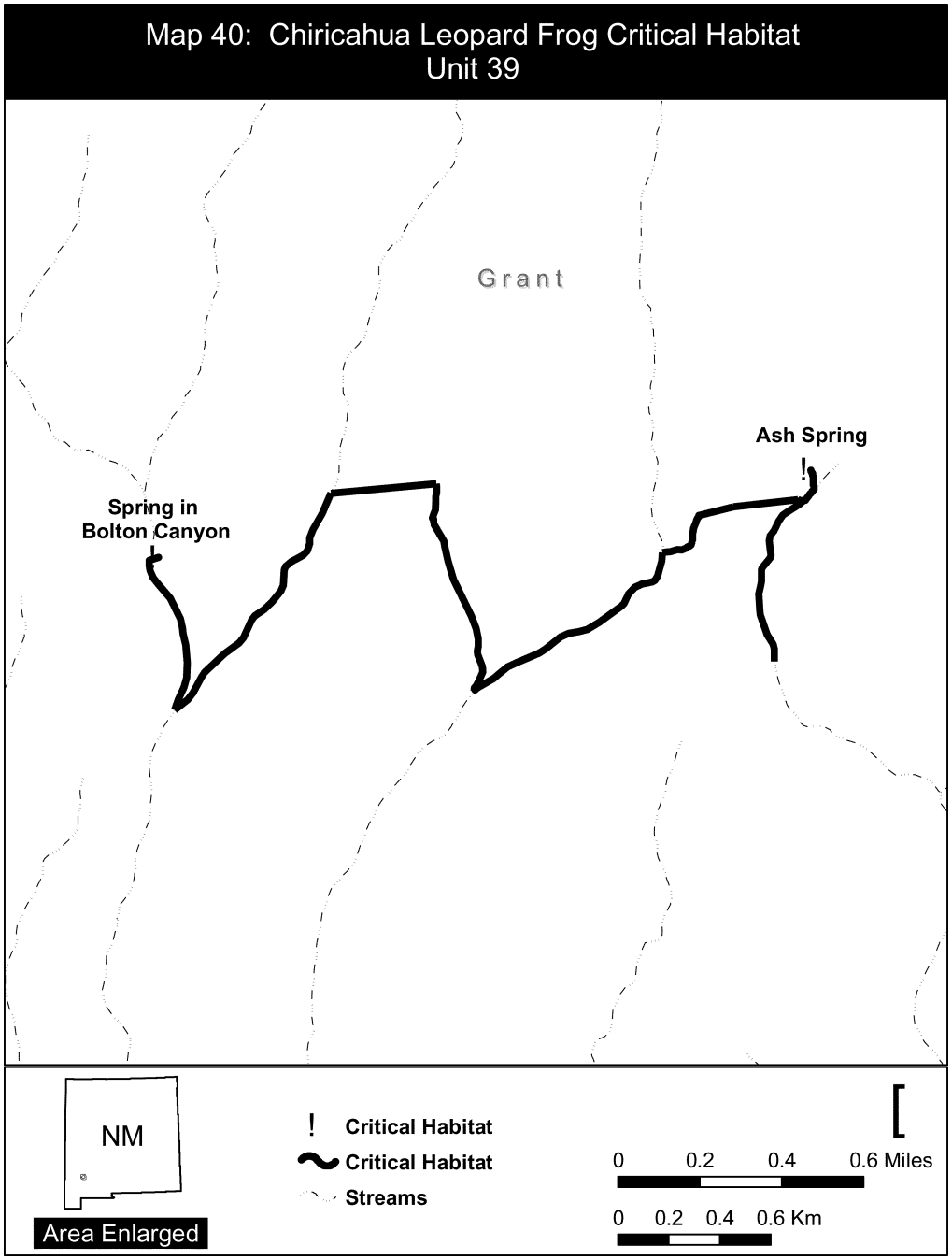
(i) Ash Spring (32.715625 N, 108.071980 W).

(ii) Unnamed spring in Bolton Canyon locally known as Bolton Springs (32.713419 N, 108.099679 W).

(iii) From the spring box at Ash Spring (32.715625 N, 108.071980 W) downstream to a dirt road crossing of the drainage (32.708769 N, 108.073579 W), an approximate stream distance of 2,830 feet (863 meters).

(iv) From the the ruins of a house in the Ash Spring drainage (32.714562 N, 108.072542 W) west to a low saddle (32.714373 N, 108.075263 W) and directly downslope into an unnamed drainage (32.713983 N, 108.076665 W), then downstream in that drainage to its confluence with another unnamed drainage (32.712829 N, 108.078131 W), then downstream in that unnamed drainage its confluence with another unnamed drainage (32.708210 N, 108.086360 W), then upstream in that unnamed drainage to the top of that drainage (32.715476 N, 108.087719 W) and directly downslope and west to another unnamed drainage (32.715207 N, 108.092094 W), then downstream in that unnamed drainage to its confluence with Bolton Canyon (32.707844 N, 108.099267 W), and then upstream in Bolton Canyon to the locally known Bolton Springs (32.713419 N, 108.099679 W), an approximate distance of 2.41 drainage miles (3.87 kilometers) and 2,650 feet (808 meters) overland.

(v) *Note:* Map of Unit 39, Ash and Bolton Springs (Map 40), follows:

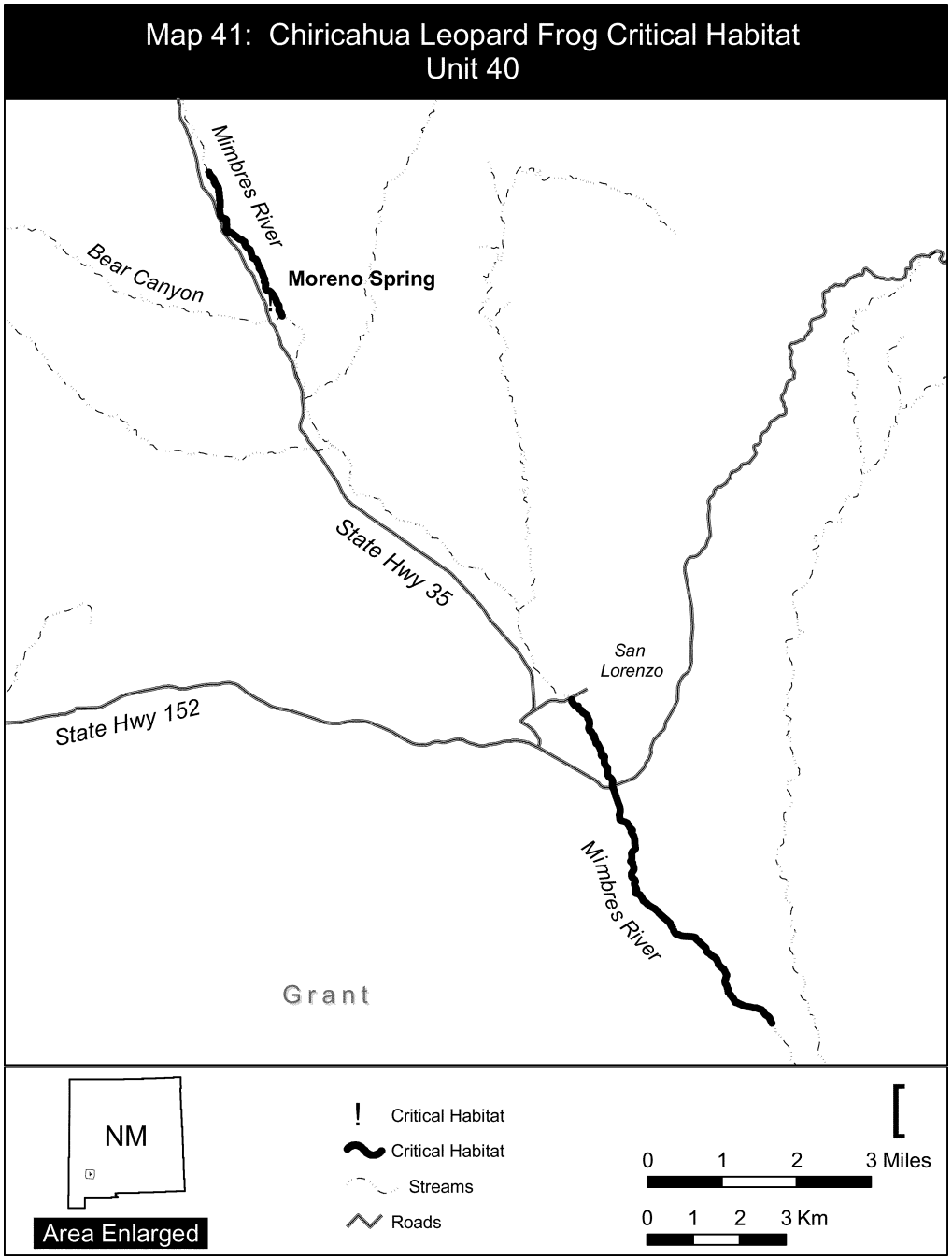


(45) Unit 40: Mimbres River, Grant County, New Mexico.

(i) The Mimbres River from the upstream Nature Conservancy property boundary (32.912474 N, 108.004529 W) downstream to its confluence with Bear Canyon (32.883751 N, 107.988036 W), to include Moreno Spring (32.887107 N, 107.989492 W) and ponds at Emory Oak Ranch, an approximate river distance of 2.42 miles (3.89 kilometers).

(ii) The Mimbres River from the bridge just west of San Lorenzo (32.808190 N, 107.924589 W) downstream to the downstream boundary of The Nature Conservancy's Disert property near Faywood (32.743884 N, 107.880297 W), an approximate river distance of 5.82 miles (9.36 kilometers).

(iii) *Note:* Map of Unit 40, Mimbres River (Map 41), follows:



* * * * *

Dated: February 23, 2011.

Will Shafroth

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2011–4997 Filed 3–14–11; 8:45 am]

BILLING CODE 4310–55–C