

SAFE HARBOR AGREEMENT
FOR THE
CHIRICAHUA LEOPARD FROG
IN ARIZONA

**Between Arizona Game and Fish Department and
U.S. Fish and Wildlife Service**



Prepared by:

Arizona Game and Fish Department
2221 W. Greenway Road
Phoenix, Arizona 85023

and

US Fish and Wildlife Service
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021

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Arizona Game and Fish Department
Office of the Deputy Director, DOHQ
2221 West Greenway Road
Phoenix, Arizona 85023-4399
(602) 942-3000

or

The Office for Diversity and Civil Rights
U.S. Fish and Wildlife Service
4040 North Fairfax Drive, Suite 130
Arlington, Virginia 22203

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1.0 Introduction and Background

Under Arizona Revised Statutes Title 17, the Arizona Game and Fish Department (Department) and the Arizona Game and Fish Commission are vested with the authority to manage the State's wildlife. The State's wildlife is a public trust, managed for the benefit of present and future generations. The Department, through its Nongame Branch, has had an active ranid frog program since 1990. In addition to the routine monitoring and management of ranid frog population sites, the Department coauthored and signed Candidate Conservation Agreements for the Ramsey Canyon leopard frog (*Rana subaquavocalis*) and for the relict leopard frog (*Rana onca*). In the past 10 years, the Department has spent more than \$2,000,000 in Heritage grants, stewardship grants, operational funds, salaries, and pass-through funds for ranid frog conservation. The Department has been integral in the development of the draft Chiricahua Leopard Frog Recovery Plan. This Agreement is an additional step the Department has undertaken to conserve ranid frogs native to Arizona.

1.1 Purpose and Need

The purpose of this Safe Harbor Agreement (Agreement) is threefold: (1) to establish a program for the conservation of the Chiricahua leopard frog (*Rana chiricahuensis*), a species listed as threatened under the Federal Endangered Species Act of 1973, as amended (Act), on private and other non-Federal lands in Arizona; (2) to provide regulatory assurances to voluntary participants that their conservation efforts will not result in required or imposed additional conservation measures or additional land, water or resource use restrictions beyond those agreed to at the time of enrollment and in the original Agreement; and (3) to provide similar assurances to landowners who do not participate directly in the conservation program established under this Agreement, but may desire regulatory assurances due to their proximity to program participants or other lands harboring Chiricahua leopard frogs.

This Agreement provides incentives, through regulatory assurances, for non-Federal landowners to undertake voluntary conservation measures for the Chiricahua leopard frog on their lands. As of the effective date of the Agreement, such measures are currently not required by the Act and are therefore entirely voluntary. In return, the U.S. Fish and Wildlife Service (USFWS) under the Safe Harbor Agreement program, will ensure that such conservation measures will not result in additional conservation measures not in the Agreement or identified at the time of enrollment, without voluntary consent of the landowner; and the landowner may use the property in any manner as long as the use does not result in the enrolled property being taken below baseline conditions (defined below). Such assurances will be provided by the Agreement and an associated enhancement of survival permit issued to the Department pursuant to Section 10(a)(1)(A) of the Act. Program participants will be provided assurances through Certificates of Inclusion to the Department's permit.

In its final rule to list the Chiricahua leopard frog under the Act, the USFWS included a rule under Section 4(d) of the Act that exempts landowners from the Section 9 take prohibitions for livestock use of, or maintenance activities at, livestock tanks located on private, State or tribal lands (USFWS 2002). Rules under Section 4(d) only apply to Threatened species. In the event that the Chiricahua leopard frog is reclassified to Endangered under the Act, the Section 10(a)(1)(A) permit that would be issued in association with this Agreement would provide

continued assurances or coverage for the Department, Participating Landowner, Participating Neighbor, or Participating State Agency (Participants, collectively) on private, tribal, or other non-Federal lands enrolled in this Agreement. Discussions of incidental take later in this document related to livestock use of, or maintenance activities at, livestock tanks located on private, tribal, or other non-Federal lands are included to provide these assurances.

1.2 Regulatory Basis and Agreement Structure

Sections 2, 7, and 10 of the Act, and the Fish and Wildlife Coordination Act, allow the USFWS to enter into this Agreement. Section 2 of the Act states that encouraging parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs is key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the Act requires the USFWS to review programs that they administer and to use such programs in furtherance of the purposes of the Act. Lastly, Section 10(a) of the Act authorizes the issuance of permits to "enhance the survival" of listed species.

The regulatory basis for this Agreement is contained in written policies prepared by the USFWS for the Safe Harbor Agreement program (USFWS and National Marine Fisheries Service (NMFS) 1999b, USFWS 2004), and in Federal regulations promulgated to codify the program's permit authorities (USFWS and NMFS 1999a, USFWS 2004). The Agreement establishes an uninterrupted conservation and regulatory program that will run for a 50-year term or until such time as the Agreement is terminated by the Department or the USFWS, acting either jointly or unilaterally (Section 3.3). A Recovery Plan has been drafted and is currently under review by the USFWS and the Department. We have designed the conservation program herein to be consistent with the draft Recovery Plan.

The document is divided into five principal sections. Section 1 presents information on the area covered by the Agreement, Chiricahua leopard frog biology, and conservation concerns. Section 2 describes the Safe Harbor Agreement program and contains those measures necessary to meet USFWS requirements for Safe Harbor Agreements. Section 3 describes various administrative procedures that apply to the Agreement, and Section 4 lists scientific and other literature cited throughout the document. Lastly, the Appendices section contains a number of forms designed to facilitate implementation of the Agreement.

1.3 Background

1.3.1 Covered Species

This Agreement covers only the Chiricahua leopard frog (*Rana chiricahuensis*).

1.3.2 Description of the Covered Area and Ownership

The range of the Chiricahua leopard frog includes a disjunct portion along the southern edge of the Colorado Plateau and headwater drainages to the south in Arizona (the White Mountains and Mogollon Rim) and New Mexico. Chiricahua leopard frogs in this area, hereafter referred to as the “rim form,” may represent a distinct species or taxon from those to the south (Platz and Grudzein 1999, also see Goldberg et al. 2004, Hillis and Willcox 2005). Chiricahua leopard frogs in the southern portion of the range, defined as those populations south of the Gila River in Cochise, Santa Cruz, Pima, and Graham counties of southeastern Arizona (Sredl and Howland 1995); southwestern New Mexico; and the northern Sierra Madre Occidental and associated sky islands in Sonora and Chihuahua, Mexico (Sredl and Jennings 2005) hereafter referred to as the “southeastern form,” inhabit drainages of the Madrean Archipelago and surrounding desert grasslands.

In Arizona, rim-form Chiricahua leopard frogs are primarily known from Apache, Gila, and Coconino counties, with smaller numbers of localities in Graham, Greenlee, Navajo, and Yavapai counties. These Chiricahua leopard frogs have been found at fewer than 20 sites in Arizona since 1993. Thirteen sites are managed by the U.S. Forest Service (USFS): Apache-Sitgreaves, Coconino, and Tonto national forests. One site is owned by the Department, and one is of unknown management status. While no population of rim-form Chiricahua leopard frogs is known from private land, private lands are in the vicinity of several sites.

In Arizona, the southeastern form of the Chiricahua leopard frog is known primarily from Cochise, Santa Cruz, and Graham counties, while a small number of populations are known from Pima County. There are roughly 40 known extant populations of the southeastern form in Arizona. The vast majority of extant populations of the southeastern form are found in the Coronado National Forest; however, many of these sites are in the vicinity of private lands. Additional localities occur on State, National Wildlife Refuge, U.S. Bureau of Land Management (BLM), and private lands.

The area covered by this Agreement and its associated Section 10(a)(1)(A) permit—termed the “covered area”—includes the entire Arizona range of the Chiricahua leopard frog on non-Federal lands. Should the rim and southeastern forms be described as distinct species during the term of this Agreement, assurances will be provided to participants having either species on their land. The Agreement refers to those frogs known as Chiricahua leopard frogs at the time of listing under the Act. In addition, the relationship of the Ramsey Canyon leopard frog (*Rana subaquavocalis*), which currently occurs in five canyons on the east side of the Huachuca Mountains, has recently been questioned relative to Chiricahua leopard frogs (Goldberg et al. 2004). Therefore, this Agreement also covers the currently recognized Ramsey Canyon leopard frogs if this taxon is ultimately subsumed within the southeastern form of the Chiricahua leopard frog.

A similar Safe Harbor Agreement for this species was developed by the Malpai Borderlands Group (MBG), covering the San Bernardino Valley and the southern Peloncillo mountains area in southeastern Arizona and parts of New Mexico. In the potential area of overlap between these agreements, the Department will defer to the MBG Agreement and anticipates participation as a Participating State Agency.

1.3.3 Biology and Distribution of the Chiricahua Leopard Frog

The recorded elevational range of the rim-form Chiricahua leopard frog is 3,500-8,890 ft. Most rim-form Chiricahua leopard frog localities are in higher elevation headwaters of the Salt, Verde, and upper Gila rivers, with the remaining sites in the Little Colorado River drainage. About half of the rim-form Chiricahua leopard frog sites are natural lotic systems (running water), and half are lentic (standing water), primarily livestock tanks, but also natural lakes and artificial reservoirs. Of 15 sites where Chiricahua leopard frogs were observed by Sredl et al. (1997), seven were in the Salt, five in the Verde, two in the upper Gila, and one in the Little Colorado river drainages. The rim-form Chiricahua leopard frog has declined dramatically, particularly in the White Mountains. There appear to be only a few localities where Chiricahua leopard frogs have been observed to be numerous, and they are absent from 84% of historical sites surveyed (Sredl et al. 1997).

The elevational range in Arizona of southeastern-form Chiricahua leopard frog records is 3,480-6,600 ft. Nearly 80% of the known localities are in the San Simon, San Pedro, and Santa Cruz river drainages (the major watersheds of this region draining northward into the Gila river), and approximately 20% are in the headwaters of the Rio Concepcion and Rio Yaqui, both of which flow south into Mexico. Southeastern-form Chiricahua leopard frogs have been found in natural lotic systems and in livestock tanks at a similar frequency. Two populations occur in artificial reservoirs. As of 1997, southeastern-form Chiricahua leopard frogs were absent at 46% of historical sites surveyed in Arizona (Sredl et al. 1997). Populations of the southeastern form have declined or disappeared from portions of their range since 1997.

1.3.4 Description of Existing Conditions

Chiricahua leopard frogs are threatened by a number of factors, including: (1) habitat alteration, destruction, and fragmentation resulting from water diversions, altered fire regimes that have resulted in recent catastrophic fires, groundwater pumping, and other factors; (2) disease, including Postmetamorphic Death Syndrome (PDS) and chytridiomycosis (the former possibly being related to the latter); and (3) predation by non-native aquatic organisms, including bullfrogs (*Rana catesbeiana*), crayfish (*Oronectes virilis*), tiger salamanders (*Ambystoma tigrinum mavortium* and *A.t. nebulosum*), and fish in the families Centrarchidae, Ictaluridae, and Salmonidae. Population losses due to these factors have disrupted metapopulation dynamics, making remaining populations more susceptible to extirpation. Furthermore, populations are often in small, isolated habitats that are subject to drying during drought. Pollution of Chiricahua leopard frog habitats by water- and air-borne contaminants may be additional factors threatening the species (Hale et al. 1995), although the effects of such contaminants are poorly understood.

The colonization of Chiricahua leopard frog habitats by non-native aquatic predators—whether by natural dispersal or by deliberate or inadvertent introduction—is an ever-present threat to Chiricahua leopard frog populations (USFWS 2002). For example, Rosen et al. (1995, 1996) found that 16 of 19 historical localities where Chiricahua leopard frogs still occurred lacked non-native aquatic predators, while all surveyed historical localities that lacked Chiricahua leopard frogs supported non-native predators. Non-native predators adversely affect Chiricahua leopard frog populations by preying on tadpoles, metamorphs, young frogs, and possibly egg masses, and

often result in the extirpation of Chiricahua leopard frogs from otherwise suitable habitat. This is a central issue addressed by the Agreement's conservation program.

Livestock grazing occurs throughout the range of the Chiricahua leopard frog, and stock tanks constructed as water sources for livestock are critically important Chiricahua leopard frog habitats. In some areas (e.g., the San Rafael Valley, San Bernardino Valley, Fossil Creek drainage, and Patagonia Mountains of Arizona), stock tanks have largely replaced the species' natural habitats and may provide the only suitable habitat. Effects of livestock grazing on Chiricahua leopard frogs can be positive or negative (Sredl and Jennings 2005); however, maintenance of viable Chiricahua leopard frog populations is thought to be compatible with well-managed livestock grazing (USFWS 2002). Furthermore, Rosen and Schwalbe (1998) state that management of stock tank habitats is relatively "tractable" compared to more natural environments—i.e., water regimes and the presence of non-native predators are more easily controlled. Consequently, management of stock tanks for the benefit of Chiricahua leopard frogs is also a central issue addressed by this Agreement. Other similar artificial or modified natural habitats (e.g., park or rural "backyard" ponds) may also play a role in Chiricahua leopard frog conservation on private lands. For example, a stronghold of the Ramsey Canyon leopard frog is a collection of ponds associated with a private orchard and bed and breakfast in the Huachuca Mountains (Ramsey Canyon Leopard Frog Conservation Team 2000).

The combined use of aquatic habitats (natural or artificial) for livestock watering and as Chiricahua leopard frog habitat raises two areas of potential concern. These are: (1) the impacts of stock tank maintenance on Chiricahua leopard frogs, and (2) the impacts of cattle use on Chiricahua leopard frog habitat quality.

Stock Tank Maintenance. For earthen, run-off fed tanks, maintenance activities consist primarily of periodic removal of accumulated sediment via bulldozer, backhoe, or other heavy equipment. This is required approximately once every 5-20 years and is typically done when the tank is dry or almost dry, in some cases requiring deliberate drying of the tank. Where Chiricahua leopard frogs are present, this would likely result in Chiricahua leopard frogs being forced to vacate the tank or in death or injury to Chiricahua leopard frogs that remained in the tank. However, tank maintenance ultimately benefits ranchers and Chiricahua leopard frogs, since earthen tanks would otherwise fill with sediment and lose their value as Chiricahua leopard frog habitat. Other types of tanks (e.g., steel or concrete) may also need periodic drying for maintenance purposes, though heavy equipment use in these cases is less likely, and Chiricahua leopard frogs can be captured for holding relatively easily in these types of tanks.

Cattle Use. Absent careful management, cattle use could result in destruction or deterioration of Chiricahua leopard frog habitat through excessive trampling, destruction of egg masses and vegetation, and fouling of water quality. Cattle use could also inadvertently result in transmission of chytrid fungus; this might occur if the disease was present in the area and was spread by cattle (or humans) moving from infected tanks to uninfected tanks.

2.0 Safe Harbor Agreement

This Agreement is between the Department and the USFWS and is effective and binding on the date of the last signature in Section 2.13.

Administrators of this Agreement are:

Department: Director
Arizona Game and Fish Department
2221 West Greenway Road
Phoenix, Arizona 85023

USFWS: Field Supervisor
Arizona Ecological Services Office
U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021

In addition to the Department and the USFWS, this Agreement also encompasses any private landowner in the covered area who agrees to undertake, or who allows to be undertaken by other parties, applicable Chiricahua leopard frog management measures, reestablishment of populations, and other measures as described in the Agreement generally, and who obtains a Certificate of Inclusion from the Department as described in Section 2.1 of the Agreement. For purposes of this Agreement, any such landowner is termed a “Participating Landowner.” Landowners within or adjacent to the covered area who do not wish to directly participate in Chiricahua leopard frog management, reestablishment of populations, or other conservation enhancement measures, but are willing to follow minimization measures, may also gain assurances by obtaining a Certificate of Inclusion from the Department. Any such landowner will be considered a “Participating Neighbor.” The Agreement may also encompass certain State agencies, especially the Arizona State Land Department (ASLD), which administers State lands and grazing allotments in the covered area. For purposes of the Agreement, any such agency is termed a “Participating State Agency.” Thus, this Agreement is effective and binding on any Participant as of the effective date of a Certificate of Inclusion issued by the Department to that landowner or State agency. The obligations of Participating Landowners and Participating State Agencies under this Agreement are summarized in Section 2.5 and Section 3.2.

The primary difference between a Participating Landowner and a Participating Neighbor is that the Participating Landowner will typically volunteer to have Chiricahua leopard frogs established at one (or more) appropriate enrolled site(s), create new or more stable habitat, or enhance habitat where Chiricahua leopard frogs already exist on the property, whereas the Participating Neighbor may receive Chiricahua leopard frogs through natural movements and dispersal into existing habitat sites.

Additional cooperators under this Agreement may include, among others, the University of Arizona (UA) and U.S. Geological Survey, Biological Resources Division (USGS). These and other cooperators will participate in the Agreement’s conservation program pursuant to their own authorities and discretion and will not be parties to the Agreement, the Agreement’s associated Section 10(a)(1)(A) permit, nor to any Certificates of Inclusion issued by the Department in association with that permit. However, such cooperators may enter into a Cooperative Conservation Agreement for the Chiricahua Leopard Frog (Appendix C) to establish a general framework for cooperation with respect to this Agreement.

2.1 Program Description

Procedurally, a Safe Harbor Agreement works as follows: a landowner agrees to undertake specific voluntary conservation measures to benefit an endangered or threatened species on his or her privately owned lands (or not to undertake activities that would prevent future benefits); and in return, the USFWS agrees that (1) incidental take will be authorized through an Enhancement of Survival section 10(a)(1)(A) permit for all populations or individuals above the pre-existing populations or numbers of the covered species (termed “baseline conditions”) on the enrolled property; (2) if additional conservation and mitigation measures are needed, such measures will be minor and within the enrolled sites; and (3) no commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water or other natural resources otherwise available for development or use under the original terms of the Agreement will be required without the consent of the landowner. In practice, this means that a landowner can alter any habitat enrolled under a Certificate of Inclusion that does not have a pre-existing Chiricahua leopard frog population, to the extent that the habitat value to the affected species is lost (a process known as “returning to baseline conditions”), once the terms of the Agreement have been satisfied. For example, if a Participating Landowner decides to alter or remove a stock tank enrolled in the conservation program under the terms of the Agreement, he or she may do so without regulatory restriction other than those that appear in the Agreement, unless a Chiricahua leopard frog population inhabits that stock tank and was extant prior to the Landowner’s enrollment in the Agreement. Then this population and the occupied habitat would be part of the pre-existing condition or baseline of the owner’s property upon the effective date of the Certificate of Inclusion, and these Chiricahua leopard frogs would remain under the full protection of the Act.

The Department will hold the Agreement’s associated Section 10(a)(1)(A) permit if approved by the USFWS. Individual landowners who wish to become participants in the Agreement may do so by obtaining a “Certificate of Inclusion” (Certificate), including the associated Documentation of Participation Form, from the Department. The Certificate then conveys the Department’s permit authorities to the Participating Landowner. The Certificate details the specific conservation commitments and covered properties agreed to under this Agreement. Covered properties will include Chiricahua leopard frog habitat and / or potential habitat, and any surrounding lands the Participant voluntarily agrees to include, in non-Federal ownership and on which the Participant has authority to implement the conservation measures (management activities) they propose in their Certificate of Inclusion and Documentation of Participation Form. An approved “template” for Certificates of Inclusion is given in Appendix A.

2.2 Covered Species, Area, and Habitats

This Agreement covers the Chiricahua leopard frog only. Its covered area (i.e., the area in which landowners may participate in the program) includes private, State, tribal, and other non-Federal lands within the range of the species in Arizona, as described in Section 1.3.2. Covered habitats under the Agreement are defined as all permanent and seasonal aquatic sites on a Participant's property, including stock tanks that are not part of the baseline conditions as described in Section 2.4 of the Agreement and Line D of the landowner's Certificate of Inclusion. As signatory to this Agreement, the Department will enroll aquatic sites on Wildlife Areas or other Arizona Game and Fish Commission properties on a case-by-case basis under separate Certificates of Inclusion.

2.3 Biological Objectives and the Metapopulation Concept

In the absence of disease, Chiricahua leopard frog populations may be best managed in the form of metapopulations (Sredl and Howland 1995). A metapopulation is an assemblage of smaller, local populations that are sufficiently close to each other to allow migrational interchange. In a metapopulation, the local populations may fluctuate or even be periodically extirpated, but the metapopulation remains intact because the processes of emigration and immigration replenish local gene pools. If infectious disease, such as chytridiomycosis, enters a metapopulation, all local populations could become quickly infected. As a result, isolated but robust populations of Chiricahua leopard frogs are also desirable as a buffer against disease. The draft Recovery Plan describes Management Areas (MAs) in which recovery actions, such as establishing new populations of Chiricahua leopard frogs, are most likely to succeed. We anticipate conservation of Chiricahua leopard frogs under this agreement will often occur in MAs, but there will likely be opportunities outside of MAs, as well.

Based on the above, this Agreement identifies the following biological objectives:

- (1) To manage, establish, and distribute a system of "primary" and "secondary" Chiricahua leopard frog population sites (as defined in Section 2.3.1) on Federal, State, private, or other lands within the covered area, such that biological contact between local populations within each metapopulation is maintained (i.e., stock tanks and other aquatic sites on a Participant's lands that support Chiricahua leopard frogs should be within migrational distance of other occupied habitats);
- (2) To manage, establish, and distribute Chiricahua leopard frog populations within the covered area, such that sufficient distance between sites supporting Chiricahua leopard frogs and those supporting bullfrogs or crayfish is maintained (this will help prevent migration by bullfrogs or crayfish into Chiricahua leopard frog habitat);
- (3) To manage for the primary importance of metapopulations. In other words, where establishment of a metapopulation is the goal, each local Chiricahua leopard frog population is important, but long-term persistence of the metapopulation is essential. The occasional loss of individual Chiricahua leopard frog populations as a result of biological, climatic, or other factors will therefore be acceptable under the Agreement, so long as the affected metapopulation persists (see Section 2.8, paragraph (4));

- (4) To manage for at least one isolated, but robust population of Chiricahua leopard frogs in each geographic area as a buffer against disease. These sites will be primary sites that can support at least 40-50 adult Chiricahua leopard frogs and are relatively drought-resistant. They should be outside of the reasonable dispersal distance of other extant populations and nonnative predators.
- (5) To manage and establish captive refugium populations, where necessary, to ensure the conservation of genetic diversity in cases where local populations have been extirpated or declined to the point that the continued existence of the species in geographic regions is at risk.

2.3.1 Population Site Definitions

Three types of Chiricahua leopard frog population sites are defined for purposes of the Agreement:

- (1) Primary Sites. A primary site is defined as a permanent or semi-permanent water source of about ¼ acre in size or more that can support at least 40-50 adult Chiricahua leopard frogs that would breed and exhibit regular recruitment in most years. A primary site will have a relatively reliable water supply (e.g., a well or spring) and will typically retain water—or, at the least, subsurface moisture—year round in all years. An ideal primary site would be a heterogeneous cienega or stream area with plentiful pools containing permanent water, no non-native predators, and suitable habitat for all life stages year round. An earthen stock pond with a double tank and an auxiliary water supply fed by a well also may be a good primary site. Another type of primary site might consist of a single large or an aggregated group of concrete or steel “drinkers” fed by a well and set with a float valve to ensure a constant water supply. Furthermore, primary sites within metapopulations should also have terrestrial travel corridors or connectivity to secondary or other primary sites that will facilitate movement of Chiricahua leopard frogs between sites. Local populations within a metapopulation should be no more than five miles from at least one other local population. Other primary sites should be isolated as a buffer against disease. The criteria for a primary site are the amount, reliability, and relative permanence of water, capability to support 40-50 breeding adult Chiricahua leopard frogs, and the extent to which Chiricahua leopard frogs can move from a primary site to neighboring sites. Biologically, primary sites will serve as relatively permanent Chiricahua leopard frog population sites from which translocation stock can be obtained. In the case of a local population within a metapopulation, primary sites shall also be habitats to which Chiricahua leopard frogs can migrate or be translocated, and from which natural emigration to other sites can occur. In regard to isolated but robust populations, primary sites should be more than five miles from other Chiricahua leopard frog populations, with no emigration or immigration from or to other populations.
- (2) Secondary Sites. A secondary site is defined as a water source that is typically smaller than a primary site or one that may occasionally go dry. A secondary site would typically be expected to hold water year round on an average of three years out of four (i.e., 75% of years overall). A typical secondary site would be any stock tank configuration fed directly by run-off or by a storage tank fed by run-off (run-off-fed tanks hold water less reliably

than well-fed or spring-fed tanks). Secondary sites will most likely be occupied by Chiricahua leopard frogs during wet years only, to which they would migrate naturally, not via translocation. These sites will be located within five miles of primary sites that are part of a metapopulation. Breeding would occur at secondary sites, but not every year. An ideal location for a secondary site would be in or near a natural migration corridor such as a creek bottom or draw. Small “drinker”-type configurations in such corridors or streams with semi-permanent pools would be good secondary sites.

- (3) Captive Refugia. A captive refugium is defined as a natural or “quasi-natural” aquatic site managed in a highly controlled setting. These refugia may be established to conserve a genetic or geographic stock of Chiricahua leopard frogs in peril, but may also be desirable as a holding facility for Chiricahua leopard frogs that need to be temporarily moved out of harm’s way (e.g. during drought that dries a stock tank, or in the case of a population threatened by ash or sediment flow). Refugia may also serve as a source of egg masses, tadpoles, and adult Chiricahua leopard frogs for translocation to recovery sites, for augmentation, or to repopulate habitats after environmental disasters. Surplus Chiricahua leopard frogs from these facilities may also be used for research purposes. Refugia populations may be located in wild or semi-wild managed aquatic habitats; or at zoos, museums, backyard ponds, fish hatcheries, or other similar facilities. Captive refugia would typically contain circulating/filtered permanent water with a surface area of at least 10 m² and would be protected from predation or unauthorized stocking or removal of Chiricahua leopard frogs. An ideal captive refugium would be a 10 m² “backyard” pond, its water level maintained with an automatic water leveler with approximately half the pond less than two feet deep and half at least two feet deep, at least 25% shaded, and securely fenced against predators and unauthorized visitors.

2.3.2 Translocation and Distribution Criteria

A key element of this conservation program will be the maintenance of existing Chiricahua leopard frog populations within the covered area and the establishment of new populations through Chiricahua leopard frog translocations and dispersal. For purposes of this Agreement, the term translocation means the movement by permitted agents (holding all necessary permits) of Chiricahua leopard frogs from one site to another.

The Chiricahua leopard frog translocation/distribution criteria described below will be used to determine where translocation of Chiricahua leopard frogs within the covered area will occur and how they should be distributed. These criteria are designed to achieve the biological objectives described above and to establish and maintain suitable metapopulation dynamics, where appropriate, through natural Chiricahua leopard frog colonization, dispersal, and interchange. However, in practice this may be difficult to achieve, at least in the early years of the program, when active management of Chiricahua leopard frog populations—including artificial interchange through ongoing translocations and establishment of captive refugia—will probably be necessary. Specific translocation/distribution criteria are:

- (1) Establishment of new Chiricahua leopard frog populations within the covered area shall occur at primary sites and refugia only.

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- (2) A suitable mix of primary and secondary sites shall be maintained. Primary sites are needed for Chiricahua leopard frog reproduction and survival during periods of seasonal dry weather and long-term drought, to provide areas to which Chiricahua leopard frogs from secondary sites can migrate during such periods, to provide sites from which migration and recolonization can occur, and also to provide a buffer against disease (in the case of isolated, robust populations). Secondary sites are important as aids to natural dispersal and recruitment during wet years or cycles and because primary (i.e., permanent and semi-permanent) sites will be relatively scarce and alone may not be sufficient to maintain healthy metapopulations.
 - (3) Structure of metapopulations: To the maximum extent practicable, Chiricahua leopard frog distribution within each metapopulation shall consist of at least four primary populations that exhibit regular recruitment, three of which are extant most of the time. Primary populations should be arranged in such a way that no local population will be greater than five miles from at least one other local population unless facilitated dispersal is planned. Metapopulations should include at least one large, healthy primary population (e.g., at least 100 adults) to achieve an acceptable level of viability as a larger unit. If drought can be managed effectively so small, lentic habitats have a good chance of persistence, overall metapopulation viability may be achievable with a smaller number of individuals per local population (e.g., 40 – 50 adults). Most primary populations should be self-sustaining with minimal management (e.g. minimal or no augmentation, predator control, and habitat maintenance over a 25-year period). A system of population corridors consisting typically (but not exclusively) of secondary sites located in, near, or adjacent to natural drainage lines and spaced at 1-2½ mile intervals is desirable between primary populations to encourage and support natural Chiricahua leopard frog dispersal. A combination of habitat types, including earthen stock ponds, steel tanks, concrete tanks, cienegas, and streams is also desirable. Each of these sites may occur on lands owned by Federal, State, or participating non-Federal landowners.
 - (4) Isolated, but robust populations: These populations should be established opportunistically, but should generally represent 20% or less of the total primary sites. At least one should be established, if possible, within each major river drainage or mountain range. The draft recovery plan will provide additional guidance on establishment of isolated, but robust populations.
 - (5) Prior to translocation of Chiricahua leopard frogs into any aquatic site within the covered area, the site shall be inspected for suitability and evaluated using the following suitability criteria to the maximum extent practicable: (i) demonstrated absence, at the time of reestablishment or translocation, of American bullfrogs, predatory fish, crayfish, tiger salamanders (unless native), and chytridiomycosis; (ii) low risk of colonization by American bullfrogs, non-native fishes, crayfish, chytrids, or tiger salamanders, including a minimum of five miles overland distance and seven miles in-drainage distance from known American bullfrog populations and four miles from crayfish populations; (iii) presence, typically, of water year round; (iv) presence of emergent vegetation; (v) for concrete or steel tanks, a means for Chiricahua leopard frogs to get into and out of the tank and permanent or semi-permanent water depths of at least 18 inches; and (vi) presence of suitable water quality. Although specific Chiricahua leopard frog water

quality tolerances are not currently known, waters should not be anoxic, should not exhibit high sulfide levels, and should exhibit pH levels of no lower than 6.0 or higher than 9.0. Specific decisions concerning water quality suitability shall be subject to the concurrence of the Department. In general, translocations should not occur within dispersal distance of frog populations that test positive for chytridiomycosis. In some cases, aquatic sites not meeting these criteria can be restored to become viable primary sites (e.g. removal of non-native fishes).

- (6) Prior to translocation of Chiricahua leopard frogs to any enrolled aquatic site on a Participant's property, an information "baseline" shall be established. This baseline shall include the following information: (i) type of site (earthen, steel, concrete, or natural tank; stream; cienega); (ii) whether the site will be managed as a primary or secondary site, or captive refugium; and if a primary site, whether it will be part of a metapopulation; (iii) a general description of the site and its condition; (iv) what, if any, improvements will be made to the site as described in Section 2.6; (v) initial presence or absence of non-native aquatic predators; (vi) history of the site with respect to occupancy by Chiricahua leopard frogs; (vii) depth, size, and bank conditions of the site; (viii) history of the site with respect to livestock use (e.g., numbers, seasonality); (ix) basic water chemistry (subject to available funding for water quality analysis); and (x) any other pertinent information.
- (7) Sources for Chiricahua leopard frog translocations will include, but are not limited to, existing Chiricahua leopard frog populations, the Department's rearing facility in Pinetop, Arizona-Sonora Desert Museum, Phoenix Zoo, Scottsdale Community College, other captive refugia, and *in situ* rearing facilities (e.g., on-site aquatic sites that are protected from predators and from which young Chiricahua leopard frogs can disperse naturally to nearby population sites). Chiricahua leopard frogs typically will be translocated at the egg mass, tadpole, or metamorph stage.
- (8) Chiricahua leopard frog translocations shall be conducted in a manner that: (i) maintains, to the maximum extent practicable, genetic diversity within each Chiricahua leopard frog metapopulation; and (ii) prevents or minimizes disease transmission. To accomplish these two criteria, a Genetics Management Plan and Disease Prevention Protocol, respectively, will be prepared and implemented as described in Section 2.3.3 of the Agreement.

2.3.3 Genetics, Disease Prevention, and Captive Rearing and Propagation

Genetic Management Plan. Maintaining or enhancing genetic diversity or representation in Chiricahua leopard frog populations within the covered area through careful population management will be an important issue during implementation of this Agreement. Population genetics management under the Agreement would be implemented in accordance with the draft Chiricahua leopard frog Recovery Plan (USFWS 2006); the finalized recovery plan when approved; and any additional recommendations from the recovery team, state agencies and academic researchers that are appropriate for meeting the recovery criteria as defined in the final recovery plan adopted by USFWS.

Disease Prevention Protocol. As described in Section 1.3.4, Chiricahua leopard frogs may be subject to a number of diseases, including chytridiomycosis caused by a chytrid fungus (*Batrachochytrium dendrobatidis*). Chytridiomycosis is transmissible through zoospores that swim through water or through direct contact between Chiricahua leopard frogs. The disease can likely be spread via muddy or wet boots, vehicles, or other equipment during Chiricahua leopard frog management activities; as a result of cattle grazing activities; and through flood events and natural migration of Chiricahua leopard frogs. Appendix G of the draft Chiricahua Leopard Frog Recovery Plan (USFWS 2006), Field Work Disease Prevention Protocol will be incorporated here by reference and will be followed during the implementation of this Agreement. Modifications of this protocol will be made as new information is developed on chytridiomycosis and other diseases that threaten Chiricahua leopard frogs through the finalization of the Chiricahua Leopard Frog Recovery Plan, and any additional recommendations from the recovery team, state agencies and academic researchers that are appropriate for meeting the recovery criteria as defined in the final recovery plan adopted by USFWS. Additional protocols may need to be developed and implemented to allow the Department to work with landowners to minimize disease transmission associated with land management actions (e.g. grazing, stock tank maintenance/operation, etc).

Headstarting, Captive Breeding, Refugia, and Holding Facilities. Propagation, refugia, and temporary holding facilities will likely all be needed to maintain current populations and to establish new populations of Chiricahua leopard frogs. Headstarting of eggs and tadpoles collected in the wild, and possibly captive breeding, will likely be needed under this program, because natural donor populations for Chiricahua leopard frog translocations are limited. Successful headstarting and captive breeding of Chiricahua leopard frogs have occurred at the Department's facility in Pinetop, Arizona, the Phoenix Zoo, and Grand Canyon University. The Arizona-Sonora Desert Museum and Scottsdale Community College have reared and bred ranid frogs of various species in the past and may have facilities available for Chiricahua leopard frog rearing. In any case, cooperation should be maintained among rearing/breeding facilities, the Department, and the USFWS to ensure that appropriate facilities are adequately funded and operated. Captive or semi-wild refugium populations may also be established with participants as described in Sections 2.3.1 and 2.3.2. Captive refugia must comply with the USFWS's policy regarding controlled propagation of species listed under the Act (USFWS 2000), as well as any other guidelines agreed upon by the USFWS and the Department. Holding facilities may be needed to temporarily house Chiricahua leopard frogs that are rescued from drying stock tanks, habitats threatened by fire or sediment/ash flow, removed from an enrolled site being returned to baseline under this Agreement, or other situations in which Chiricahua leopard frogs need to be

temporarily moved from harm's way. Through a Partners for Fish and Wildlife project, USFWS is assisting Douglas High School in the construction of a refugium/captive breeding and holding facility that could be employed for Chiricahua leopard frog projects under this Agreement. The draft Chiricahua Leopard Frog Recovery Plan identifies headstarting, refugia populations, and holding facilities as activities needed during the first five years of the plan. The benefits of this program will be almost immediate as new population sites are developed under this Agreement with Chiricahua leopard frogs that are currently in captivity.

2.4 Determining Baseline Conditions

For a landowner to participate in this Agreement, the baseline conditions on his or her property must be determined. Under the USFWS's Safe Harbor Agreement policy (USFWS and NMFS 1999b, USFWS 2004), baseline conditions are defined as "...population estimates and distribution and/or habitat characteristics and determined area of the enrolled property that sustain seasonal or permanent use by the covered species at the time the Safe Harbor Agreement is executed between the Services and the property owner" (64 FR 32717).

The baseline condition in this agreement will be based upon presence or absence of Chiricahua leopard frogs at a site, and will not require quantification of the Chiricahua leopard frogs at a site. A baseline condition above zero will have Chiricahua leopard frogs present at the time of enrollment. A baseline condition of zero will have no Chiricahua leopard frogs present at the time of enrollment. If recent Chiricahua leopard frog use of an aquatic site has been documented, and Chiricahua leopard frogs are absent at the time of enrollment a baseline condition above zero may be appropriate. However, as this is a voluntary Agreement, the landowner, the Department and the USFWS may negotiate the appropriate baseline under which the landowner agrees to enroll.

Because the Chiricahua leopard frog has experienced significant declines in numbers and distribution (Section 1.3), it is expected that baseline conditions for many properties enrolled under the Agreement will be zero—that is, that no Chiricahua leopard frogs considered part of the baseline conditions will inhabit the property at the time of enrollment. Any Chiricahua leopard frog populations inhabiting a landowner's property prior to the date of enrollment in this agreement will be considered part of a baseline condition greater than zero. Populations that are part of the baseline condition greater than zero have full protection of the prohibition of take in Section 9 of the Act and are not covered by the Agreement and its associated Section 10(a)(1)(A) permit. Specific measures for determining baseline conditions under this Agreement are as follows:

- (1) Baseline conditions shall be determined through the joint efforts of the Department; USFWS; or other agency or contracted biologist, when appropriate; and Participants, as applicable, and as described in paragraphs (2) and (3) below. Baseline condition determinations will be made at the time of enrollment in the Agreement. In unusual circumstances, baseline condition determinations may be made prior to enrollment in the Agreement.
- (2) The areas on Participant properties that will be subject to the baseline condition determination are limited to aquatic sites on the property only, including stock tanks. In the event Chiricahua leopard frogs are known to already exist on the property, or are

found as a result of a baseline condition determination, the baseline condition description will be consistent with paragraph (4) below.

- (3) The parties to this Agreement explicitly understand that baseline condition on a Participant's property will be determined from April through September in accordance with established survey protocol (Appendix D) or future revisions of this protocol.
- (4) Where covered properties are determined to have an environmental baseline condition greater than zero (i.e., where specific stock tanks or sites are identified that support Chiricahua leopard frogs), the baseline condition shall include the aquatic site itself, any associated aquatic or emergent vegetation, and any other regularly wetted or saturated areas and associated vegetation. These areas shall be described in the Certificate of Inclusion, and detailed descriptions or maps showing the locations of the areas shall be attached to the Certificate. The baseline condition does not specifically include or require quantifiable numbers of Chiricahua leopard frogs at a site; it only includes Chiricahua leopard frog presence and characteristics of the site itself under the conditions described above.
- (5) When USFWS has not been directly involved with determining the baseline condition for a Participant's property, USFWS will need to review and provide their concurrence with the baseline determination before a Participant may enroll in the Agreement (64 FR 32717). Therefore, the Department will send the signed Certificate of Inclusion, Documentation of Participation, and all information supporting the baseline determination to USFWS for review and concurrence (see Section 3.1).
- (6) In the event the permit or participants of any individual or regional safe harbor agreement for Chiricahua leopard frogs is transferred to the AGFD Section 10(a)(1)(A) permit held in association with this Agreement, the original baseline of the participants will be honored under this Agreement, as long as the conservation commitments under the original individual or regional safe harbor agreement have been fully implemented or met. Additionally, any of the participants in the Ramsey Canyon Leopard Frog Candidate Conservation Agreement will be provided with a zero baseline, if *Rana subaquavocalis* is subsumed into *Rana chiricahuensis*, provided that the conservation commitment under the conservation agreement has been fully implemented or met.

The parties to this Agreement understand any lands or waters on a Participant's property that are part of baseline conditions greater than zero are not included within the regulatory assurances otherwise provided by this Agreement, and that any such lands or waters will remain under any of the Act's restrictions or requirements that existed at the time of the effective date of the Agreement's associated Certificate of Inclusion for any given landowner.

2.5 Required Conservation Measures

This section lists specific minimum requirements that must be met under the Agreement, including a list of required conservation measures (management actions) that must be implemented to alleviate risks, the “required conservation period” (the period during which conservation commitments under the Agreement must be implemented or maintained), and monitoring and reporting requirements. Section 2.6 includes other desirable (but optional) conservation measures, including translocation and establishment of new populations that, if implemented, would greatly further the conservation of the Chiricahua leopard frog.

2.5.1 Required Conservation Measures

Considering the issues described in Section 1.3.4, Participating Landowners must implement all the required conservation measures, where applicable, and at least one of the optional conservation measures, described in section 2.6, to receive the assurances under this Agreement and associated section 10(a)(1)(A) Enhancement of Survival permit. The following conservation measures are mandatory in appropriate Chiricahua leopard frog habitat and will be part of all Certificates of Inclusion issued by the Department to the Participating Landowner.

Occupied Lotic Systems:

Riparian habitat along streams and rivers occupied by Chiricahua leopard frogs will be managed to attain and maintain Proper Functioning Condition (PFC). PFC is a state of resiliency that will allow a riparian-wetland system to hold together during a 25 to 30-year flow event, sustaining that system's ability to produce values related to both physical and biological attributes (Prichard et al. 1998).

Stock Tanks

(1) Maintenance.

(i) Routine tank or pond maintenance. To avoid excessive mortality or extirpation of Chiricahua leopard frogs during regularly scheduled maintenance activities (including deliberate drying prior to maintenance), a landowner shall commit to one or more of the following, as appropriate: (a) subject to available funding, construction of a double-tank system or of small refugia sites at single tank systems, as described in Section 2.6, options (2) and (3); and/or (b) where practicable, implementation of maintenance regimes, schedules, or techniques that maintain a portion of the habitat as escape cover for resident Chiricahua leopard frogs during maintenance activities. The landowner shall also provide adequate notification, as described in Section 2.5.2, and permission to appropriate personnel (i.e., the Department, USFWS, or other permitted individuals) to collect and hold Chiricahua leopard frogs from the habitat during maintenance activities and to return the Chiricahua leopard frogs to the habitat upon completion of maintenance activities. In addition, all maintenance activities shall be conducted during the period when Chiricahua leopard frogs are most active (April 1 to October 31), unless otherwise approved by the Department, with the exception of emergency maintenance as described in 2.5.1(1)(ii). If, however, none of the above measures are desired or feasible for a given aquatic site, then Chiricahua leopard frogs will be introduced into such a site only if it meets short-term habitat goals and only with the concurrence of the Department.

(ii) Emergency maintenance. From time to time it may be necessary for a Participating Landowner to undertake immediate repair or maintenance actions at an aquatic site in emergency situations (e.g., a flood event in which a tank is in danger of washing out, damage to pond liner, or disruption of water flow from source). In such cases, the notification requirements described in the preceding paragraph and in Section 2.5.2 of the Agreement with respect to tank maintenance activities shall be considered waived, and the landowner may proceed with corrective actions as needed provided, however, that the Landowner reports the circumstances of the action to the Department not more than 72 hours after the situation triggering the action has ended or been controlled. The Department, in turn, shall inform the USFWS of the incident within 15 days of receipt of the landowner's notification. If, in the subsequent judgment of the Department and the USFWS, significant damage to Chiricahua leopard frog habitat has occurred as a result of the action, the situation will be regarded as an altered circumstance as described in Section 2.8, paragraph (4), of the Agreement, and actions to restore Chiricahua leopard frog habitat, if any, will be implemented consistent with that section. For purposes of this agreement, an emergency situation is defined as any in which, in the sole judgment of the Participating Landowner, an aquatic site is in imminent danger of destruction or significant damage as a result of emergency or urgent conditions.

All Occupied Habitats

- (1) Activities, including cattle grazing, in and around aquatic sites supporting Chiricahua leopard frogs shall be managed so as to avoid destruction or excessive deterioration of Chiricahua leopard frog habitat or egg masses. This will include: (i) avoidance of excessive trampling in and around the site, especially during Chiricahua leopard frog breeding periods when egg masses are easily destroyed (i.e., late February through October for sites below 5,900 feet, and June through August above 5,900 feet.); (ii) appropriate management of the numbers and seasonality of cattle use, as documented within an approved NRCS ranch management plan or similar ranch plan specified in the Certificate of Inclusion; and (iii) any other appropriate measures to which the Participant consents. All such measures must be compatible with necessary operations on the property. Agreed-upon site-specific measures will be part of Certificates of Inclusion.
- (2) The introduction of non-native predators or potential disease vectors into Chiricahua leopard frog habitat shall be prevented or otherwise minimized and controlled via the following measures: (i) commitments by Participating Landowners not to knowingly engage in releases of bullfrogs, non-native predatory fish, crayfish, tiger salamanders, or other wildlife on covered properties and to not knowingly permit any other person or organization to engage in such releases on covered properties; (ii) commitments by Participating Landowners to report any observed occurrences of such species in Chiricahua leopard frog habitats on covered properties to the Department or the USFWS; (iii) commitments by Participating Landowners to permit access to their land by appropriate personnel necessary to implement control programs for these species (subject to reasonable advance notice); and (iv) where appropriate, and subject to their concurrence, agreement by Participating Landowners to conduct control measures when requested by the Department (e.g., temporarily drying out stock tanks that support such species). Any such measures, however, must be compatible with needed activities by the Participating Landowner.

- (3) Prescribed fire, pesticide treatments, and other land treatments that alter biotic communities or change runoff characteristics can have a detrimental effect on aquatic sites. Through the introduction of ash, sediment, pesticides, and other contaminants into the aquatic environment. While these activities may have a long-term beneficial effect for the aquatic habitat, the short-term effects could result in loss of populations in primary and secondary sites. To prevent loss of populations in this manner, any land treatment upstream of an enrolled site should include conservation measures such as buffers around drainages, erosion control structures, and buffers around the enrolled sites to minimize possible effects, as applicable. Participants should work with the Department and the USFWS to develop effective minimization measures on a case-by-case basis, where applicable. The draft Recovery Plan provides guidance on conservation measures applicable in these situations.

2.5.2 Notification Requirements

By signature of a Certificate of Inclusion under this Agreement, the Participants agree to provide a minimum of 60 days notice to the Department prior to any of the following actions: (1) aquatic site maintenance activities, especially involving sediment removal, at any tank site that supports Chiricahua leopard frogs; (2) the deliberate drying out of an aquatic site that supports Chiricahua leopard frogs, either in preparation for maintenance activities or for any other reason; (3) the retirement or removal of an aquatic site that supports Chiricahua leopard frogs that is not part of a baseline (i.e., a return to baseline conditions); and, (4) as described in Section 3.4 of the Agreement, the sale or transfer to any other party of property owned by a Participant and subject to the Agreement. The Department agrees to notify the USFWS of any such action within five days of receipt of notice from a Participant. The purpose of requiring notification for (1), (2), and (3) above is to provide the Department (or another program cooperator, as appropriate) with an opportunity to salvage Chiricahua leopard frogs from the site prior to disturbance or removal of the site and either return them to the site or move them to a new site. Similarly, Participating Landowners are encouraged to alert the Department if any aquatic site on their lands that supports Chiricahua leopard frogs is in danger of drying out as a result of drought or other conditions. The purpose of requiring notification for (4) above is to provide the Department and the USFWS with an opportunity to discuss the Agreement with the new landowner and, if appropriate, to enroll the new landowner in the Agreement. Under the Agreement, the Department and Participating Landowners also agree to the notification requirements described in Section 2.5.1, paragraph (1)(ii).

2.5.3 Required Conservation Period

Each Certificate of Inclusion issued by the Department to a Participating Landowner must specify the time period (10 years minimum) during which the Chiricahua leopard frog conservation measures identified in the Agreement will be maintained or implemented. This is termed the “required conservation period.” The required conservation period is considered the minimum that a landowner must implement in order to obtain the program’s regulatory assurances. The assurances will run for two years past the required conservation period, but can not be given past the term of the section 10(a)(1)(A) permit (section 2.9 and 3.6). However, the Department and the USFWS anticipate most Participating Landowners will continue to implement most or all of the Agreement’s conservation commitments even after the required conservation period has been satisfied. This is in large part because the Agreement’s conservation program was specifically designed to be compatible with cattle ranching. Thus, in most cases, Participating Landowners are expected to have little incentive or need to discontinue their commitments. Nevertheless, Participating Landowners may, if necessary, terminate their conservation commitments under the Agreement at the end of the required conservation period and may even terminate or reduce their conservation commitments prior to the end of the required conservation period, under circumstances beyond their control, through the “early termination of conservation commitments” procedures described in Section 3.3 of the Agreement.

A minimum of a 10-year commitment is required under this Agreement, but longer periods are allowable and are encouraged. The conservation period actually agreed to within individual Certificates of Inclusion will depend on several circumstances—including whether or not the landowner has any future land-use plans, whether or not conservation measures under the Agreement have included a material benefit to the landowner (e.g., all or partial funding of a well, in which case a longer conservation period would be appropriate), and the landowner’s comfort level. Any required conservation period in excess of 10 years must have the consent of the Participating Landowner, and the specific conservation period agreed to must be specified within the Landowner’s Certificate of Inclusion (i.e., Line F in Appendix A).

2.5.4 Monitoring and Reporting

This Agreement provides for two types of monitoring as required by USFWS policy (USFWS and NMFS 1999b, USFWS 2004) and Federal regulation (USFWS and NMFS 1999a, USFWS 2004): (1) compliance monitoring (to ensure that all commitments in the Agreement are being met) and (2) biological monitoring (to ensure that the biological goals of the Agreement are being met and to determine the effectiveness of the conservation program).

Compliance Monitoring. The Participating Landowner is responsible for ensuring annual monitoring and reporting related to implementation of the Agreement and fulfillment of its provisions are arranged. The Department, or any authorized representative of the Department, will ascertain compliance as necessary. Specific requirements are:

- (1) A maximum of two visits per year (and a minimum of one visit per two years) for compliance monitoring to each Chiricahua leopard frog population site subject to this Agreement to monitor maintenance of baseline conditions, ensure terms and conditions of

the Agreement are being implemented, monitor any incidental take as authorized in the Permit, and verify that all required conservation commitments are being properly implemented. Prior to any such visit, Department monitoring personnel or representatives shall give notice to the Participating Landowner of not less than 14 days prior to the visit and shall arrange the visit in a manner that is compatible with the landowner's schedule and needs. This monitoring requirement shall commence from the effective date of the Certificate of Inclusion for each affected Participating Landowner. To the maximum extent practicable, compliance monitoring will be conducted in conjunction with biological monitoring.

Biological Monitoring. Specific criteria that biological monitoring will address are: (i) the success of Chiricahua leopard frog translocations conducted under the Agreement; (ii) the distribution of Chiricahua leopard frogs in the covered area and the degree to which that distribution satisfies the criteria described in Section 2.3.2; (iii) the distribution of known bullfrog populations and populations of other non-native aquatic predators relative to Chiricahua leopard frog population sites; and (iv) the need for adjustments to the Agreement's conservation program through the Adaptive Management provisions described in Section 2.7. Specific biological monitoring requirements are as follows:

- (2) For any aquatic site on covered lands to which Chiricahua leopard frogs have been translocated: (i) a minimum of one monitoring visit occurring 2-10 days after translocation, followed by one visit every three months for one year. For an established population site (i.e., one for which the preceding schedule has been met or one that supported Chiricahua leopard frogs prior to the effective date of the Agreement): (ii) a minimum of one visit every six months, to continue throughout the term of the Agreement. Additional monitoring may be advisable depending on circumstances (e.g., the presence or absence of problem conditions such as uncertain water levels or bullfrogs, or specific research related to efficacy of translocation) and will only occur if agreed upon by the Participating Landowner and the Department. The monitoring schedule described in this paragraph shall remain in effect unless the Department and the landowner/participant determine a more frequent or a less frequent schedule is appropriate.
- (3) Information to be collected during site visits described in paragraph (2) above shall consist of the following: (i) type of site (earthen, steel, concrete, or natural tank; stream; etc.); (ii) whether the site is a primary or secondary site, and whether it is a local population in a metapopulation or an isolated robust population, as defined by Section 2.3.1; (iii) general description of the site and its condition, including water depth, water quality (subject to available funding), vegetation and bank condition, and other pertinent features; (iv) presence or absence of Chiricahua leopard frogs and at least approximate numbers of adult and juvenile frogs, tadpoles, and egg masses observed; (v) presence or absence of non-native aquatic predators; (vi) presence or absence of other Chiricahua leopard frog predators; (vii) presence or absence of cattle; (viii) impacts, if any, of cattle use or site maintenance activities; and (ix) any other pertinent information. This information shall be recorded on a standard survey form (*Rana chiricahuensis* - Fish and Wildlife Service/Arizona Game and Fish Department/New Mexico Department of Game and Fish Survey Protocol for Project Evaluation in Appendix D).

Responsibility for Biological Monitoring. Biological monitoring under this Agreement will be funded and carried out primarily through the joint efforts of State and Federal agencies, academic institutions, conservation organizations, and other entities as described in Section 2.10. The biological monitoring will be conducted in accordance with the *Rana chiricahuensis* - Fish and Wildlife Service/Arizona Game and Fish Department/New Mexico Department of Game and Fish Survey Protocol for Project Evaluation in Appendix D, or future revisions to this protocol, provided any revision does not add any significant undue burden upon the participants. Biological monitoring activities described in this section will be conducted by the Participating Landowners and agency, academic, and conservation personnel in a unique manner for each covered property as agreed upon by the Department, the USFWS, and the Participating Landowner. The agency, academic, or contract biologists to carry out monitoring will be agreed upon with the Participating Landowner, and it is understood these biologists will be required to obtain the appropriate State and Federal and other permits for the type of monitoring that they will perform. The primary obligations of Participating Landowners with respect to biological monitoring will be to grant access to their properties by personnel conducting the monitoring, subject to reasonable advance notification, and to monitor the impacts of cattle use and other routine activities on Chiricahua leopard frog population sites on their properties as necessary to ensure the measures described in Section 2.5.1 are being satisfied.

Annual Report. By February 1 of each year, each Participating Landowner will submit a report to the Department that describes activities under the agreement for the preceding year. Information required in the Participating Landowner's report is found in paragraph (4) (vi) through (ix) of this section. The Department, as the Permittee under this Agreement, shall submit one copy of a cumulative report describing activities under the Agreement for the preceding year to the USFWS's Arizona Ecological Services Office and Albuquerque Regional Office at the beginning of each year. The Department's annual report will be due by March 15 of each year throughout the term of the permit, except that if the first year of the Agreement is a partial year of six months or less, activities implemented in that year may be reported in the following year's report. Information required in the Department's annual report is as follows:

- (4) A summary of: (i) the cumulative total of Participating Landowners (as well as Participating Neighbors and Participating State Agencies) enrolled in the Agreement at the time of preparation of the report; (ii) any Participant that enrolled under the Agreement in the preceding year, including copies of any related Certificates of Inclusion; (iii) the cumulative total of Chiricahua leopard frog populations being managed in each metapopulation at the time of the report, including a description of the status of the populations and their associated habitats (by definition, metapopulations managed under this Agreement include only those in which a Participant has signed a Certificate of Inclusion); (iv) the status of each metapopulation and isolated, robust population within the covered area at the time of the report with respect to the Agreement's biological goals and translocation/distribution criteria; (v) pertinent results of biological monitoring activities conducted in the preceding year (including copies of survey forms), especially with respect to any biological or habitat-related problems that need to be addressed; (vi) any Chiricahua leopard frog management activities that were implemented in the preceding year, including Chiricahua leopard frog reestablishments or translocations and stock tank improvement projects; (vii) funding sources that were used in the preceding

year and funding sources expected to be obtained in the following year; (viii) any incidental take of Chiricahua leopard frogs known or suspected to have occurred within the covered area in the preceding year and an explanation of the reasons for the take; and (ix) any other pertinent information regarding the status of the Agreement's conservation program or implementation of the program by the Department, any Participant, or other program cooperator.

2.6 Optional Conservation Measures

Each habitat considered for Chiricahua leopard frog management, including translocation, will present its own considerations and challenges. A key consideration will be what, if any, improvements in structure, design, depth, size, or other features will be implemented to improve Chiricahua leopard frog habitat quality and reliability and to achieve the Agreement's biological objectives. Additionally, the cost of any improvements to Chiricahua leopard frog habitat quality and reliability or management will also be a consideration to the landowner. Some costs may be deferred through various grants and cost-sharing, including those opportunities identified in section 2.10 of this Agreement.

This section presents a range or "menu" of conservation options that may be considered in determining what specific measures will be implemented at a given site. These options will be considered on a case-by-case basis at the time a landowner elects to participate in the Agreement. If the landowner agrees to implement one or more of these options, that commitment will be described in the landowner's Certificate of Inclusion. Specific options are:

- (1) Chiricahua leopard frog translocation. Chiricahua leopard frog populations may be established at appropriate sites in accordance with Section 2.3.2. Existing Chiricahua leopard frog populations at primary sites may also be augmented if necessary to meet biological goals.
- (2) Construction of a double tank system. A double tank system can provide good habitat for Chiricahua leopard frogs. In this configuration, one tank serves as a sediment trap and the other as the primary water reservoir. The advantage of this system is that during tank maintenance activities the sediment trap is cleaned out (via bulldozing, dredging, or other means) while the reservoir tank remains relatively undisturbed. The reservoir tank consequently functions as a refugium for resident Chiricahua leopard frogs during tank maintenance, reducing mortality or injury of Chiricahua leopard frogs that might otherwise occur during sediment clearing activities.
- (3) Construction of small refugia sites at single tank systems. This is a potential alternative to a double tank system. In this configuration, a small refugium consisting of a second aquatic site is provided or constructed near or adjacent to the primary tank. The refugium can consist of a steel or lined (concrete or polyvinyl) tank or "drinker," wetted pasture, or natural feature (e.g., a scour basin in a nearby drainage) fed by a well, spring, or storage tank. The refugium provides cover to which Chiricahua leopard frogs can escape during maintenance activities at the primary tank or can be used as a holding area to which Chiricahua leopard frogs can be temporarily moved. However, any non-earthen (i.e., steel or lined) tank system intended to support Chiricahua leopard frogs must include design

features allowing for ingress and egress by the Chiricahua leopard frogs and at the same time must prevent entrapment and drowning of other animals.

- (4) Fencing. Fencing is an option at any aquatic system. The purpose of fencing is to prevent destruction or excessive deterioration or trampling of Chiricahua leopard frog habitat at an aquatic site. This can be accomplished by fencing a site in its entirety (if not needed as a wildlife or stock water source) or fencing a portion of a site. The fenced portion provides relatively undisturbed aquatic habitat and escape cover during maintenance activities, cattle use, or other disturbances.
- (5) Deepening the tank or pool. Deepening can increase the amount of water in a tank or pool, ensuring that it will retain water longer during periods of dry weather or drought. It creates more permanent Chiricahua leopard frog habitat and can be used to upgrade a secondary population site into a primary population site. However, too deep a tank or pool may be difficult to dry out for maintenance purposes or to rid it of bullfrogs or non-native fish (e.g., if the site is close to the limits of bullfrog dispersal). Thus, deepening should balance the needs of relative water permanence with the ability to deliberately manipulate water levels.
- (6) Well drilling. Well drilling is a good way to create a permanent and reliable water source for Chiricahua leopard frogs, and any type of aquatic system can be fed by a well. Drilling and maintaining a well can be expensive and will be used only in circumstances that are technically and financially feasible.
- (7) Pipelines. Pipelines under this Agreement would typically be used to connect sites (primary or secondary) to a water source. Pipelines can be constructed of a variety of materials, in a variety of configurations (e.g., buried or laid on the ground), and can be used to improve water reliability at existing sites or to feed new sites. Pipelines raise several technical considerations (e.g., topography, distance traveled) and will be used only when technically and financially feasible.
- (8) Removal of non-native aquatic predators from otherwise suitable sites. In some cases, otherwise suitable aquatic sites within the covered area may already contain bullfrogs, crayfish, or other non-native predatory species. Such sites could be converted to Chiricahua leopard frog population sites if the predators can be eliminated. While this strategy will depend on the feasibility of removing the non-natives (e.g., on the type of species involved, the size of the water source, etc.), it should be considered at selected sites.
- (9) Maintenance of existing habitat conditions. In some situations, a commitment to maintain existing conditions may provide a net conservation benefit to the Chiricahua leopard frog. This option is useful when future threats are predictable and probable. Preventing the future diversion of water from suitable sites or maintaining seral stage of a pond or wetland by removing encroaching climax or invasive vegetation may be appropriate.
- (10) Enhancement of travel corridors. Travel corridors along drainage lines and across upland areas are of particular importance in maintaining metapopulations. In areas where these

corridors may be extremely long or subject to disturbances, it may be beneficial to enhance the aquatic and terrestrial habitat within these corridors. Shallow depressions that catch rainwater and provide temporary aquatic sites between primary and secondary sites would facilitate unencumbered movement within a metapopulation. In addition, fencing or road closures (seasonal or permanent) and rehabilitation of disturbed areas would also facilitate movement. Such enhancements should not overly benefit or promote dispersal of non-native predators, such as bullfrogs.

- (11) Enhancement of stream and cienega habitats. In some areas, natural perennial and intermittent streams and cienegas will exist on a landowner's property. Enhancement of these areas through options similar to paragraphs (2), (3), (5), (6), (7), and/or (9), discussed above, would also be beneficial. Improvements to correct incised channels would also be beneficial for Chiricahua leopard frogs.
- (12) Vegetation enhancement. In existing and new habitats it would be beneficial for riparian vegetation to be enhanced within enrolled sites. This may include vegetation to stabilize shorelines and banks or emergent and submerged vegetation to provide aquatic habitat structure and cover for Chiricahua leopard frogs.

2.7 Adaptive Management

Adaptive management allows a conservation program to be adjusted from time to time to take into account new scientific information and to ensure that the program is as effective as possible. Several aspects of Chiricahua leopard frog biology and population dynamics are not currently well understood, including dispersal distances, mortality during drought, adult and larval survivorship, the role of disease and pollution, and population dynamics (Rosen 1999). The Recovery Plan, now in preparation, is expected to provide guidance on a variety of topics relevant to this Agreement. Furthermore, the Agreement will need to respond to specific management opportunities and needs as they arise. The Agreement therefore includes an adaptive management program to ensure: flexibility, implementation of Recovery Plan objectives to the maximum extent practicable, and that the most up-to-date scientific information is used.

The need to incorporate adaptive management modifications into the Agreement may result from four potential sources: (1) new scientific information concerning the biology or population dynamics of Chiricahua leopard frogs or non-native predators of Chiricahua leopard frogs; (2) new scientific information concerning the effects of other biotic or abiotic factors on Chiricahua leopard frogs; (3) information derived from the Agreement's monitoring program; and (4) management needs or recommendations described in a future Recovery Plan. We have attempted to make the provisions of this Agreement consistent with the draft Recovery Plan.

Two types of adaptive management modifications within the covered area may be implemented under this Agreement, depending on their scope and the process for incorporating them. These are termed: major revisions to the Agreement; and ongoing management adjustments. A major revision is defined as one triggered by the availability of substantial new scientific information, typically from a source not related to the Agreement, concerning any biological assumption or criterion upon which the conservation program is based and that would require modification of any of the Agreement's specific biological criteria or conservation measures. Examples of

circumstances requiring a major revision would include new information suggesting that the Agreement's translocation/distribution criteria are inadequate to meet its biological objectives, or that additional management measures not described in the Agreement are needed to ensure survival of Chiricahua leopard frog populations within the covered area (e.g., as a result of disease or pollution). Major revisions would likely require that the Agreement be amended to reflect any required new standards or management activities. This, in turn, would require mutual agreement between the Department, USFWS, and any and all affected Participants and written formalization of the amendment as described in Section 3.3.

Ongoing management adjustments are defined as those typically triggered by the Agreement's monitoring program concerning any situation within the covered area that requires a management response that is within the scope of the existing Agreement. Examples of circumstances requiring ongoing management adjustments would be the identification of specific problems within the covered area that need corrective action (e.g., that the distribution of Chiricahua leopard frog populations within a metapopulation is not meeting the Agreement's translocation/distribution criteria); problems at specific Chiricahua leopard frog population sites within the covered area (e.g., colonization by bullfrogs, drought, or extirpation of a population); or the identification of specific management opportunities or needs that would benefit the conservation program (e.g., a stock tank site that, with improvement, could be upgraded from a secondary to a primary site). The Department, USFWS, and other program cooperators, including Participating Landowners, will address ongoing management adjustments collaboratively. Sections 2.5.1 (Required Conservation Measures) and 2.8 (Changed Circumstances) describe conditions that could potentially require ongoing management adjustments, as well as the standards that will be considered in determining the appropriate adjustment or response.

Any adaptive management revisions or adjustments as described above—whether major revisions or ongoing management adjustments—will need to be consistent with the regulatory assurances described in Section 2.12 of the Agreement. Consequently, adaptive management modifications that would result in the commitment of funding or conservation measures by the Department or a Participating Landowner not identified in this Agreement or an associated Certificate of Inclusion would require the consent of the Department and Participating Landowner, as applicable.

2.8 Changed circumstances

Changed circumstances are circumstances affecting a species or geographic area covered by the Agreement that can reasonably be anticipated by plan developers and the Department and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events). Administrators of this Agreement anticipate that five types of changed circumstances could occur within the covered area over the life of the Agreement:

- (1) Drought. Droughts are a periodic phenomenon in the arid environments of Arizona and are almost certain to occur over the life of the Agreement. During drought, the Department (and other cooperators) and Participating Landowners will monitor Chiricahua leopard frog population sites and habitat conditions in the covered area according to the needs of the situation and will implement corrective measures on a case-by-case basis. Responses to actual or potential drought conditions will include, as necessary and appropriate: (i) improvements in water reliability at selected sites through water-hauling, well-drilling, well deepening, and other means as described in Section 2.6; (ii) salvage and relocation of Chiricahua leopard frogs from desiccated sites to other sites or temporary holding facilities; (iii) re-establishment of extirpated populations when drought conditions cease, as described in paragraph (4) of this section; and (iv) other measures as appropriate.
- (2) Invasion of Chiricahua leopard frog habitat by non-native predators. Colonization or inadvertent introduction of fish, bullfrogs, crayfish, or other predators into Chiricahua leopard frog habitat is also a significant possibility over the life of the Agreement. Bullfrogs and crayfish are of special concern, because they can migrate substantial distances over land under the right conditions and are present throughout the State. Preventing and detecting bullfrog colonization of Chiricahua leopard frog habitat is a key component of the Agreement's translocation criteria (Section 2.3.2), required conservation measures (Section 2.5.1), and monitoring program (Section 2.5.4). Responses to predator colonization of Chiricahua leopard frog habitats within the covered area will be addressed by the Department and Participating Landowners on a case-by-case basis and will include, as necessary and appropriate: (i) removal of existing non-natives from new Chiricahua leopard frog population sites prior to translocation as described in Section 2.3.2; (ii) periodic control and removal of non-natives from Chiricahua leopard frog habitat using available means, including drying out affected tanks as described in Section 2.5.1; (iii) adjustment of the Agreement's conservation program to incorporate new scientific information concerning bullfrog migration, population dynamics, etc. as described in Section 2.7; and (iv) other measures as appropriate.
- (3) Disease and pollution. The effects of disease and pollution on Chiricahua leopard frogs are poorly understood (USFWS 2000; Rosen 1999). However, chytridiomycosis has been implicated in the disappearance of Chiricahua leopard frogs from some areas, including stock tank populations in New Mexico in the 1980s (USFWS 2002, Sredl and Jennings 2005), and ranid frog populations in southeastern Arizona are considered some of the most likely to have been affected by airborne pollutants from copper smelters in northern Mexico and southeastern Arizona (Blanchard and Stromberg 1987; Hale and Jarchow 1988). The Agreement's conservation program addresses the possibility of inadvertently

transmitting disease into Chiricahua leopard frog populations as a result of translocations and cattle use (Sections 2.3.2 and 2.3.3). If, however, disease or pollution becomes a problem despite such efforts, it is difficult to predict what effects these factors may have on Chiricahua leopard frog populations within the covered area or what measures might be undertaken to address them. The Department and Participating Landowners will therefore address such issues, should they arise, as dictated by the severity of the problem, funding availability, technical feasibility, and scientific standards accepted at the time.

- (4) Extirpation of Chiricahua leopard frog populations. It is expected that Chiricahua leopard frog population sites within the covered area will, from time to time, disappear or be extirpated as a result of one or more of the above factors or other factors. To some extent, this would be consistent with the Agreement's metapopulation approach, especially for secondary population sites, but even in some cases, for primary sites. In any event, if and when previously extant Chiricahua leopard frog populations disappear (as determined by the Agreement's monitoring program), the Department and Participating Landowners will respond cooperatively as follows:

First, the cause will be determined if possible. At secondary sites, this may be a predictable seasonal pattern. At primary sites, the cause will likely be an adverse condition such as drought or invasion by non-native predators and will usually have been identified in advance and an attempt made to correct it. Second, an appropriate response will be determined. In the case of secondary sites in which no discernible problem has been identified, usually no action will be taken. In the case of primary sites and secondary sites in which a discernible problem has been identified, the decision whether or not to reestablish the Chiricahua leopard frog population will be made based on the following factors: (i) the technical feasibility of correcting the problem and likelihood of successful reestablishment; (ii) the biological importance of the population to its constituent metapopulation or as an isolated, robust population; and (iii) funding availability to undertake corrective action and reestablish the population.

- (5) Emergency Maintenance. From time to time, aquatic habitat sites may be threatened via flash flooding and excessive sedimentation. Provisions have been included to provide for such contingencies [sections 2.5.1, paragraph (1)(ii) and 2.9.2, paragraph (1)(i)(a)]. The emergency situation or the resulting maintenance may result in the loss of the enrolled aquatic habitat or the population of Chiricahua leopard frogs at the specific site. The responsibility for restoration or maintenance of the stock tank would be that of the Participant to the extent that repairs are within the scope of normal ranching activities; responsibility for responding to the loss of an established Chiricahua leopard frog population or degradation of habitat quality are not within the normal scope of ranching activities and would be addressed as discussed below by the Department.

Responsibility for addressing changed circumstances. Generally, the responsibility for monitoring, evaluating, and correcting changed circumstances will not lie with the Participating Landowners. Exceptions to this would include changed circumstances that are specific to a landowner's property (e.g., the collapse of a tank's berm) and associated corrective measures that are clearly identifiable and within the normal scope of ranching activities (e.g., repair of the berm). A Participating Landowner may undertake such measures with appropriate notification to

the Department as specified in Section 2.5.2. Otherwise, the responsibility for implementing responses to changed circumstances deemed necessary by the Department, in consultation with the USFWS, will lie with appropriate State and Federal agencies, academic institutions, and suitable conservation organizations as described in Section 2.10.

2.9 Neighboring Landowner Protections

The parties to this Agreement recognize that some landowners who might otherwise wish to participate in the Agreement may nonetheless have significant concerns about the potential regulatory effects of such participation on their neighbors. Similarly, landowners who elect not to become active program participants but who own property near or adjacent to landowners who do, or who own property near Federal lands containing Chiricahua leopard frogs, may have the same concerns. These concerns center primarily on the possibility that Chiricahua leopard frogs inhabiting a Participating Landowner's property or other nearby lands could move to aquatic sites on a neighboring property. In the absence of suitable regulatory protections, such neighboring landowners could then face certain legal liabilities under Section 9 of the Act. Under such circumstances, non-participating landowners might even elect to move, alter, or destroy aquatic sites on their lands that are not occupied by Chiricahua leopard frogs in an effort to avoid future occupation by Chiricahua leopard frogs—in effect, removing potential Chiricahua leopard frog habitat. If Chiricahua leopard frogs did immigrate onto lands owned by a non-participant to this Agreement, and lacking some other regulatory assurance or exemption (i.e., provisions conferred in the final rule to list the Chiricahua leopard frog, which exempt incidental take from the Section 9 prohibitions, so long as such incidental take results from livestock use of or maintenance activities at livestock tanks located on private, State, or tribal lands [see Section 3.9]; establishment of an experimental, non-essential population of Chiricahua leopard frogs under Section 10(j) of the Act; or an approved Habitat Conservation Plan and associated incidental take permit), those Chiricahua leopard frogs would receive the full protection of the Act and the landowner would not receive the regulatory assurances offered by this Agreement. By removing these issues, this section of the Agreement is expected to increase the benefits of the overall conservation program in three ways: (1) by potentially increasing enrollment in the Agreement by Participating Landowners, who might be concerned about potential effects on their neighbor, (2) by relieving regulatory concerns for property owners adjacent to Federal lands, and (3) by helping to maintain the amount of potential habitat available on neighboring lands. Either way, Chiricahua leopard frogs are expected to benefit as a result of regulatory protections for neighboring landowners.

2.9.1 Participating Neighbors

This Agreement may also encompass individual landowners in the covered area who are not Participating Landowners as defined in Section 2.0 of the Agreement, but who own property near or adjacent to a Participating Landowner or other lands containing Chiricahua leopard frogs and are concerned about the potential regulatory effects due to their proximity to Chiricahua leopard frog populations on such property. Such landowners, while not active participants in the Agreement, may agree to more limited conservation measures than is required of active participants and thereby obtain certain regulatory assurances under the Agreement. For purposes of this Agreement, any such landowner is termed a "Participating Neighbor." After baseline conditions have been determined, any landowner may become a Participating Neighbor by

agreeing to the limited conservation measures described in Section 2.9.2 below and by obtaining a Certificate of Inclusion from the Department. Thus, this Agreement, with its regulatory assurances, is also effective and binding on any Participating Neighbor as of the effective date of the Certificate of Inclusion issued by the Department to the Participating Neighbor.

2.9.2 Conservation Measures

There are two principal differences between the Agreement's conservation program as implemented by Participating Landowners and as implemented by Participating Neighbors. First, Participating Landowners will in some cases consent to the translocation of Chiricahua leopard frogs onto their lands, while Chiricahua leopard frogs would typically occupy a Participating Neighbor's lands only through dispersal from adjoining properties. Second, Participating Landowners will typically consent to relatively active management of Chiricahua leopard frog populations on their lands by Agreement program cooperators (e.g., stock tank improvements, population manipulations, and biological monitoring). Participating Neighbors, however, will typically agree only to the relatively passive conservation commitments as described below.

If and when a neighboring landowner elects to participate in the Agreement to be considered a Participating Neighbor, that neighboring landowner shall be responsible for the following measures.

- (1) Required Conservation Measures. To avoid unnecessary mortality of Chiricahua leopard frogs or deterioration of Chiricahua leopard frog habitat at aquatic sites on a Participating Neighbor's lands, including stock tanks, that support Chiricahua leopard frogs, Participating Neighbors agree:
 - (i) (a) Where practicable, to implement aquatic site maintenance regimes, schedules, or techniques that maintain a portion of the site as escape cover for resident Chiricahua leopard frogs during maintenance activities; or, subject to the Participating Neighbor's consent (b) to grant access to appropriate (e.g., Department, USFWS, or other permitted) personnel to collect and hold Chiricahua leopard frogs from the site during site maintenance operations and to return the Chiricahua leopard frogs to the site upon completion of maintenance activities, and, in this event, to provide 60 days notice to such personnel prior to commencement of maintenance operations. Maintenance resulting from an emergency situation (c) will be defined and treated consistently with the same situations for a Participating Landowner, described in Section 2.5.1(1)(ii).
 - (ii) To manage activities, including cattle grazing, in and around aquatic sites supporting Chiricahua leopard frogs so as to avoid destruction or excessive deterioration of Chiricahua leopard frog habitat. This will include: (a) avoidance of excessive trampling in and around the site, especially during Chiricahua leopard frog breeding periods when egg masses are easily destroyed (i.e., late February through October for sites below 5,900 feet, and June through August above 5,900 feet.); (b) appropriate management of the numbers and seasonality of cattle use; and (c) any other appropriate measures to which the Participating

Neighbor consents. All such measures must be compatible with necessary operations on the property.

- (iii) To minimize or prevent the introduction of non-native predators or potential disease vectors into Chiricahua leopard frog habitat by: (a) committing to not knowingly engage in releases of bullfrogs, non-native predatory fish, crayfish, tiger salamanders, or other wildlife onto covered properties and to not knowingly permit any other person or organization to engage in such releases on covered properties; (b) reporting any observed occurrences of such species in Chiricahua leopard frog habitat on their properties to the Department; and (c) permitting access to lands by appropriate (e.g., Department or USFWS) personnel to implement control programs for these species.
- (2) Notification Requirements. By signature of a Certificate of Inclusion, the Participating Neighbor agrees: (i) to inform the Department whenever the Participating Neighbor has reason to believe that Chiricahua leopard frogs have or may have colonized any stock tank or other aquatic site on any property enrolled under the Agreement (if such site was not known at the time of enrollment); (ii) to provide a minimum of 60 days notice to the Department prior to: (a) the retirement or removal of an enrolled aquatic site supporting Chiricahua leopard frogs or any other significant change in land-use activity at an enrolled site that would be expected to result in take of Chiricahua leopard frogs; and (b) as described in Section 3.4, the sale of any property owned by the Participating Neighbor and subject to the Agreement to any other party. The purpose of requiring notification for (2)(ii)(a) above is to provide the Department (or another program cooperator, as appropriate) with an opportunity to salvage Chiricahua leopard frogs from the site prior to disturbance of the tank and move them to another site. The purpose of requiring notification for (2)(ii)(b) above is to provide the Department with an opportunity to discuss the Agreement with the new landowner, and if appropriate, to enroll the new landowner in the Agreement. Participating Neighbors are also encouraged to provide the Department with 60 days notice whenever the landowner plans to conduct sediment removal activities at a site or otherwise to dry out a site; the purpose of this is to allow Chiricahua leopard frogs to be salvaged and either moved or returned to the site, as appropriate.
- (3) Monitoring. The Department or any authorized representative of the Department will conduct compliance monitoring under this section. Specific requirements are a maximum of one visit per year (and a minimum of one visit per two years) to each Chiricahua leopard frog population site subject to this Agreement to verify that all required conservation commitments are being properly implemented. Prior to any such visit, Department monitoring personnel or representatives shall give notice to the Participating Neighbor of not less than 30 days prior to the visit and shall arrange the visit in a manner that is compatible with the landowner's schedule and needs. This monitoring requirement shall commence from the effective date of the Certificate of Inclusion for each affected Participating Neighbor. The parties to this Agreement understand that monitoring personnel will enter the Participating Neighbor's property solely to inspect aquatic sites on the covered property that are enrolled in the Agreement.

Biological monitoring requirements of Participating Neighbors are limited to granting access by personnel (agreed upon by the USFWS, the Department, and the Participating Neighbor) to confirm reports of occupation of a site by Chiricahua leopard frogs under paragraph 2 (i), above. Additional monitoring of occupied sites is subject to the Participating Neighbor's approval.

2.9.3 Understandings of the Parties

The parties to this Agreement understand, in the spirit of the Agreement, that Participating Neighbors will have reduced reason or incentive to manage stock tanks or other aquatic sites on covered properties in a fashion solely intended to prevent colonization of such sites by Chiricahua leopard frogs. The parties also understand that a Participating Neighbor may, subject to his or her sole discretion, increase conservation actions at Chiricahua leopard frog sites enrolled under the Agreement at any time.

2.9.4 Incidental Take Authorization

With respect to Participating Neighbors, this Agreement and its associated Section 10(a)(1)(A) permit will authorize take as described in Section 2.12.2 of the Agreement.

2.10 Funding and Obligations of the Parties

Funding. Specific conservation activities that will require funding under this Agreement include, but are not limited to: (1) translocation of Chiricahua leopard frogs to aquatic sites on covered properties within the covered area; (2) improvements in such sites necessary to provide suitable Chiricahua leopard frog habitat conditions (e.g., fencing, removal of non-natives); (3) ongoing management of new and existing Chiricahua leopard frog populations on covered properties to ensure their survival and that the Agreement's biological goals are being met; (4) monitoring; and (5) captive propagation of Chiricahua leopard frogs and maintenance of propagation facilities.

The conservation program established by the Agreement is intended to be a collaborative process between the USFWS, Department, Participating Landowners, and other public and private cooperators. Accordingly, no single source will support the program's funding requirements. Instead, each cooperator will contribute funds, services, and other program needs according to its resources and role in the program. In addition, funds in the form of contracts, grants, and donations will be sought from program-related sources (i.e., program cooperators) as well as non-program related sources, such as conservation organizations and foundations. Possible funding sources to implement the conservation program include:

- Agreements under Section 6 of the Act between the USFWS and the Department
- Arizona Water Protection Fund (Arizona Department of Water Resources)
- Conservation organizations (e.g., The Nature Conservancy)
- Heritage Grants Program (Department)
- Heritage Stewardship program (Department)
- Landowner Incentive Program (administered by the Department)
- National Fish and Wildlife Foundation

- North American Wetlands Conservation Act funds (USFWS)
- Partners for Fish and Wildlife program (USFWS)
- USFWS Refuges Division
- State Wildlife Grants from the USFWS to the Department
- Wildlife Habitat Incentive Program (USDA Natural Resources Conservation Service and USFWS)

To some extent, the actual level of conservation effort implemented under this Agreement will depend on two factors: (1) the number of landowners who enroll in the Agreement; and (2) the success of its signatories and other program cooperators in providing or otherwise obtaining funding. For example, the number of Chiricahua leopard frog populations actually established and maintained in the covered area, the number and type of habitat improvements actually implemented, and the level of monitoring required, all depend on these factors. Thus, specific enrollment levels, funding levels, and funding needs over the long-term cannot be exactly predicted and to some extent will depend on each other. However, at a minimum, the Department and the USFWS expect the following. First, landowner participation will likely be sufficient to protect existing Chiricahua leopard frog populations on those covered private lands within the covered area. Second, currently identifiable resources—including those available from the Department and the USFWS—are sufficient to support the program at the current level of interest. Beyond that, additional participation and funding would likely be needed. It is reasonable to expect that the Agreement program will gain momentum over time and that additional resources will be developed by program cooperators commensurate with increasing landowner interest, public and private interest generally, and evolving biological and funding needs.

The above notwithstanding, the parties to this Agreement understand that neither the Department, USFWS, any Participating Landowner, or any program cooperator under this Agreement can be compelled to provide financial assistance of any kind, except to the extent that such assistance is explicitly required under the Agreement, an executed Certificate of Inclusion, or any other legal instrument entered into by any such party or cooperator to the Agreement.

Obligations of the parties. Specific obligations of the Administrators of this Agreement and other program cooperators are as follows:

The Department shall:

- (1) Hold the Agreement's associated Section 10(a)(1)(A) permit on behalf of Participants, as applicable; assist and coordinate with the USFWS in administering the Agreement; serve as primary point of contact with Participants; assist Participants in enrolling in the Agreement; issue Certificates of Inclusion to Participants, as appropriate; and, assist Participants in processing amendments to the Agreement;
- (2) Provide copies of signed Certificates of Inclusion and Documentation of Participation to USFWS within 14 days of completion.
- (3) Assist Participants in determining baseline conditions for an affected property;

- (4) Assist in Chiricahua leopard frog propagation, translocation, biological monitoring, and management as described in the Agreement or as otherwise mutually agreed to with the USFWS;
- (5) Conduct or assist with compliance monitoring in accordance with Section 2.5.4, paragraph (1), and Section 2.9.2, paragraph (3), and conduct or assist biological monitoring, as described in Section 2.5.4, paragraphs (2) to (3), of the Agreement;
- (6) Provide five days notice to the USFWS upon receipt of a 60-day notification from Participating Landowners, Neighbors, or State Agencies of plans for disturbance to or removal of an aquatic site or the sale or transfer of any property subject to this Agreement, as described in Section 2.5.2.
- (7) At its option, and when appropriate, accept funding of any or all types on behalf of the Agreement's conservation program and disperse such funds as necessary to support its conservation activities; and,
- (8) Prepare annual reports describing implementation of the Agreement in accordance with Section 2.5.4, paragraph (4), of the Agreement.

The USFWS shall:

- (1) Assist the Department in administering the Agreement and assist the Department and Participants in processing amendments to the Agreement, as appropriate;
- (2) Review all Certificates of Inclusion and Documentation of Participation forms received from the Department; and provide written notification to the Department within 30 days of receipt of these documents if they are not consistent with the Agreement or the terms of the associated section 10(a)(1)(A) enhancement of survival permit.
- (3) Review and approve baseline determinations, and assist the Department and Participants in making such determinations when requested;
- (4) As described in Sections 2.5.2 and 2.9.2, paragraph (2), of the Agreement, assist in salvaging Chiricahua leopard frogs from enrolled aquatic sites on Participant's properties, if and when the landowner elects to return the site to baseline conditions or otherwise retire or remove an enrolled aquatic site (e.g., Section 3.3);
- (5) Assist in Chiricahua leopard frog propagation, translocation, biological monitoring, and management as described in the Agreement or as otherwise mutually agreed to with the Department, and conduct appropriate coordination between its Ecological Services Division, Refuges Division, and Fisheries Division, as necessary to achieve this requirement;
- (6) Assist with compliance monitoring in accordance with Section 2.5.4, paragraph (1), and Section 2.9.2, paragraph (3), and assist with biological monitoring, as described in Section 2.5.4, paragraphs (2) to (3), of the Agreement;

- (7) Provide funding and resources for Chiricahua leopard frog conservation activities when appropriate (and available), e.g., under the Partners for Fish and Wildlife program or other programs; and
- (8) Assuming approval of this Agreement, issue a permit to the Department in accordance with Section 10(a)(1)(A) of the Act and 50 CFR 17.32(d), with a 50-year term (see Section 3.7), that would provide the Department and Participants, as applicable, with authorization for incidental take of Chiricahua leopard frogs and provide regulatory assurances under the Act. The permit would authorize incidental take of Chiricahua leopard frogs as described in Section 2.12.2 of the Agreement.

Participating Landowners shall:

- (1) As their primary role, voluntarily provide Chiricahua leopard frog habitat sites on their lands, establish or maintain Chiricahua leopard frog populations at appropriate sites, and/or enhance suitable habitats; and manage those sites in a manner consistent with the terms of this Agreement and any associated Certificates of Inclusion, including monitoring the impacts of cattle use at enrolled habitats as described in Section 2.5.4, as applicable;
- (2) Assist the Department and the USFWS in determining baseline conditions for their properties;
- (3) Cooperate with the Department and the USFWS in developing specific conservation programs for their lands and assist the Department in completing the Certificate of Inclusion (Appendix A);
- (4) Permit access to their lands by the Department or the USFWS (or its authorized representative) for purposes of compliance monitoring in accordance with Section 2.5.4, paragraph (1), of the Agreement and for purposes of biological monitoring by any personnel assigned or undertaking such duties under the authorities of the Agreement, as described in Section 2.5.4, paragraphs (2) to (3);
- (5) Provide a minimum of 60 days notice to the Department prior to disturbance to or removal of an aquatic site or prior to the sale or transfer of any property subject to this Agreement, as described in Section 2.5.2.
- (6) In accordance with Section 2.5.3 of the Agreement—and except as otherwise provided in Sections 2.5.1 or 3.3, or as otherwise provided for in the Participating Landowner's Certificate of Inclusion—maintain Chiricahua leopard frog population sites on a Participant's lands for a minimum of 10 years from the effective date of any applicable Certificate of Inclusion and implement: (i) at a minimum, applicable measures described in Section 2.5 of the Agreement; and (ii) subject to the Participating Landowner's consent, any additional measures agreed to in the Participating Landowner's Certificate of Inclusion, including, but not limited to, assistance in stock tank improvement projects.

- (7) In accordance with 2.5.4, prepare annual reports to the Department describing implementation of the Agreement.

Participating Neighbors shall:

- (1) As their role (Section 2.9.1), (i) conduct their activities consistently with maintaining any Chiricahua leopard frogs that colonize or move onto their properties as described in Section 2.9.2 of the Agreement, and (ii) subject to the Participating Neighbor's consent, any additional measures as agreed to in the Participating Neighbor's Certificate of Inclusion;
- (2) Assist the Department and the USFWS in determining baseline conditions for their properties;
- (3) Permit access to their lands for purposes of compliance monitoring by the USFWS or its authorized representative(s), including the Department, in accordance with Section 2.9.2, paragraph (3) of the Agreement; and
- (4) Notify the Department whenever the Participating Neighbor suspects that Chiricahua leopard frogs have colonized an aquatic site on any property enrolled under the Agreement and provide a minimum of 60 days notice to the Department prior to disturbance to or removal of an aquatic site or prior to the sale or transfer of any property subject to this Agreement, as described in Section 2.9.2.

Participating State Agencies shall:

As described in Section 3.2, State agency involvement in the Agreement would be triggered by enrollment under the Agreement of lands owned or administered by the State agency but leased by another landowner. The primary obligations of Participating State Agencies in such cases—where the State agency actually becomes a signatory to a Certificate of Inclusion issued by the Department—are to:

- (1) Permit access to State lands by personnel of the USFWS, Department, other State and Federal agencies, academic institutions, and the lessee for the purpose of carrying out the Agreement's conservation activities, including but not limited to, Chiricahua leopard frog translocation, monitoring, and habitat improvement and management;
- (2) As applicable, assist the Department and the USFWS in determining baseline conditions for their properties; and
- (3) Notify the Agreement's administrators (the Department and the USFWS) if State ownership of any State lands enrolled under the Agreement are to be sold or altered in any significant way, at least 60 days prior to such action.

Other Program Cooperators:

Other program cooperators, while not signatories to this Agreement, will participate in the program in a variety of ways, as detailed below. Other program cooperators may include, but are

not limited to, USGS; the USFS, BLM, National Park Service, and Department of Defense which manage Federal lands in and adjacent to the covered area; UA; the Phoenix Zoo; the Arizona-Sonora Desert Museum; The Nature Conservancy; and Tribes. Participation by these cooperators is entirely voluntary and is subject to their approval, budget, staff availability, and existing agreements, if any. As requested by the Department and the USFWS, and subject to their discretion, cooperators shall:

- (1) Provide in-kind services (i.e., staff time, as available) to support conservation activities under the Agreement, including, but not limited to: (i) Chiricahua leopard frog management and translocation activities; (ii) biological monitoring activities; and (iii) operation of Chiricahua leopard frog propagation facilities;
- (2) Provide funding for Chiricahua leopard frog conservation activities as appropriate and available from programs administered by the cooperator; and
- (3) Conduct other conservation activities as may be specified in any Cooperator Conservation Agreement (see Appendix B) entered into by the cooperator, the Department, and the USFWS.

2.11 Expected Net Conservation Benefits

Under USFWS policy for Safe Harbor Agreements (USFWS and NMFS 1999a, USFWS 2004), the USFWS may not enter into an Agreement unless it finds that the agreement is reasonably expected to provide a “net conservation benefit” for the covered species. Moreover, under this policy the net conservation benefit must be sufficient to contribute, either directly or indirectly, to the recovery of the covered species.

This Agreement is likely to result in numerous conservation benefits to the Chiricahua leopard frog. Generally, these will accrue as a result of establishment under the Agreement of a clear, well-defined conservation program across the Arizona portion of the species’ overall range that we expect will be consistent with the species’ Recovery Plan. More specifically, this Agreement will provide for management of existing Chiricahua leopard frog populations within the covered area and for establishment of new populations through translocation and colonization. The Agreement will also thus increase effectiveness of management within discrete geographical areas by extending management efforts to private lands. These actions are expected to result in a net increase in Chiricahua leopard frog distribution, numbers, and persistence throughout the species’ range in Arizona. This Agreement will provide for improvements in Chiricahua leopard frog habitat quality and reliability through habitat improvement projects, and for the application of accepted scientific principles—involving captive propagation and rearing, metapopulation dynamics, genetics, and disease prevention—in managing the program. In addition, the Agreement will provide for the flexibility needed to respond to special management challenges and evolving circumstances through its Adaptive Management program and changed circumstances provisions. These benefits are not expected immediately, but several years after the Agreement is approved and permit issued. We expect a few landowners, who have expressed interest, to enroll immediately and to see the benefits within a year. As AGFD actively promotes the early successes of this Agreement, interest in participation is expected to increase. We expect a patchwork of non-federal lands to be enrolled in the Agreement for the life of the Agreement.

These non-Federal lands, combined with actions on Federal lands, should result in the development of functioning metapopulations and assist in long-term recovery. The exact location of participants is hard to predict, based upon the programmatic nature of this Agreement; however, we expect most private land to be enrolled in the area of the southeastern form based upon the amount of non-Federal land in the southern portion of the State. Inquiries about participation have already been received from landowners in Recovery Unit 1 and Recovery Unit 3.

The Agreement is also likely to benefit Chiricahua leopard frogs in other, indirect ways. First, by addressing the concerns of non-Federal landowners in the covered area, the Agreement is expected to secure private landowner cooperation in management of Chiricahua leopard frogs on their lands. This is especially significant in light of the importance of privately owned lands and facilities (e.g., stock tanks) to Chiricahua leopard frog survival (see Section 1.3.4). In the absence of this cooperation, many areas within Arizona would likely not support Chiricahua leopard frogs at all, and the perpetuation of several other existing populations would be uncertain. Furthermore, if it is demonstrated that livestock ranching and Chiricahua leopard frog management can be compatibly integrated, this Agreement is likely to set an example and precedent for possible future similar agreements in other areas throughout the Chiricahua leopard frog's range, as well as for other listed, or otherwise sensitive, species.

These benefits are expected to result in a net increase in Chiricahua leopard frog populations within the covered area through the direct participation of non-Federal landowners who can gain regulatory assurances through this Agreement. At present, only a handful of Chiricahua leopard frog populations exist on private lands in the covered area. Furthermore, although the period that Participating Landowners are required to maintain such populations is temporary (at least 10 years), the Department and the USFWS anticipate that many such populations will be maintained indefinitely. This is because the conservation measures under the agreement are specifically designed to be compatible with livestock ranching operations and because the associated regulatory assurances will help ensure continuing landowner cooperation. Consequently, it is expected that many landowners will maintain Chiricahua leopard frog populations on their lands so long as such maintenance is consistent with their ranching interests.

In summary, this is expected to result in a net conservation benefit to the Chiricahua leopard frog and to contribute substantially to the species' recovery by contributing to Chiricahua leopard frog population increases across a significant portion of the species' range and by ensuring reliable management of such populations. Consequently, the Department and USFWS believe that the terms satisfy USFWS regulatory requirements for approval of this Agreement.

2.12 Assurances Provided

2.12.1 Return to Baseline

The primary assurance of a Safe Harbor Agreement is the ability to return the enrolled sites back to the baseline condition at the end of a Participant's commitment. This could be a return to the original acres of potential habitat, number of individuals of the covered species, or as in this Agreement, the number of occupied sites. The process to bring an enrolled site back to baseline will include the following steps, at a minimum:

- 1) The Participant shall contact the Department to inform them of the desire to return the enrolled site(s) to the baseline condition.
- 2) The Department will determine if surveys/salvage are appropriate or needed at the site.
- 3) If deemed appropriate, the Participant and Department shall schedule times when surveys/salvages will be performed. Surveys/salvages should preferably occur during the active season, April 1 to October 31.
- 4) If deemed appropriate, salvages will occur, and as many individuals as possible should be collected and translocated into a captive propagation site, refugium, holding facility, or other wild site as appropriate.
- 5) Aquatic sites should be allowed to dry down, if possible, to encourage the movement of any remaining Chiricahua leopard frogs from the site prior to any construction or alteration.

This basic procedure should be followed at all sites to minimize the extent of direct lethal take of Chiricahua leopard frogs when a site is returned to baseline conditions. Some enrolled sites may present unique circumstances that will require some modification to this basic procedure. If a modification to this basic procedure will minimize potential take of returning the site to baseline, it should be employed. Because the return to baseline will result in the loss of any Chiricahua leopard frog population that has been established through the Agreement, the incidental take of all individuals through harm, harass, and mortality in all population sites that are not part of the baseline condition should be authorized under the Section 10(a)(1)(A) permit.

2.12.2 Anticipated Incidental Take

Section 9 of the ESA and Federal regulation prohibit the “take” (i.e., killing, harming, or harassment) of federally listed fish and wildlife species without special exemption. Any incidental take of Chiricahua leopard frogs on Participant’s properties, as applicable, that occurs as a result of the landowners’ activities (as described in Section 2.12.2) would be authorized by the “enhancement of survival permit” issued by the USFWS to the Department pursuant to Section 10(a)(1)(A) of the Act. This permit will be issued at the time of USFWS approval of the Agreement.

Incidental take of Chiricahua leopard frogs may occur under this Agreement primarily as a result of six activities: (1) cattle use of enrolled aquatic sites supporting Chiricahua leopard frog populations, or of other ranch properties; (2) aquatic site maintenance; and (3) improvement activities at enrolled aquatic sites; 4) land treatments; 5) existing land uses; and (6) a decision by a Participant to return any enrolled site or sites on their properties to baseline conditions. As described in Section 3.9, under the current listing of the Chiricahua leopard frog as a threatened species, activities listed in numbers (1) and (2) above, relevant to livestock tanks are covered on non-Federal lands by the 4(d) rule included in the final decision to list this species (USFWS 2002). Incidental take, as defined in Section 9 of the Act, from these activities is exempted under the 4(d) rule unless the Chiricahua leopard frog is reclassified as endangered or the 4(d) rule otherwise is invalidated. The discussion of take that follows is in light of the possibility of a reclassification or other invalidation of the 4(d) rule, and thus permitted incidental take from these activities is part of the assurances of this agreement. Typical ways in which Chiricahua

leopard frogs might be incidentally taken during these activities is described in Section 1.3.4 of the Agreement. Section 2.5.1 describes the measures that will be undertaken under this Agreement to minimize incidental take of Chiricahua leopard frogs during these activities. Except with respect to (6) above, these measures are designed specifically to ensure that Chiricahua leopard frog populations inhabiting affected stock tank and other sites continue to survive.

The actual levels of incidental take of Chiricahua leopard frogs that will occur under the Agreement are difficult to anticipate. This is because specific Chiricahua leopard frog population levels at any given time, both throughout the covered area and within individual sites enrolled in the Agreement, are unknown, as are the specific degrees to which Participating Landowners will undertake activities that result in incidental take. In particular, it is unclear how many Participating Landowners will elect to return lands enrolled under the Agreement to their baseline conditions over the life of the Agreement. The Department and the USFWS believe, in most cases, that Participating Landowners will not elect to return enrolled sites to baseline conditions, because stock tanks and other aquatic sites are essential features to cattle ranching, which is the primary land-use activity occurring on non-Federal lands containing Chiricahua leopard frog habitat in the covered area, and because the conservation measures in the agreement are designed to be compatible with cattle ranching. Typically, a Participating Landowner would be expected to return enrolled aquatic sites to baseline conditions only in the event that such sites are needed for another ranching purpose (e.g., a stock tank needs to be moved to another location, or a tank site is needed for another ranching use). In any case, the conservation benefits to Chiricahua leopard frogs anticipated as a result of Agreement are expected to more than balance the relatively minimal levels of incidental take anticipated as a result of the activities described above.

2.12.3 Incidental Take Authorized

This Agreement and its associated Section 10(a)(1)(A) permit will authorize take of Chiricahua leopard frogs that is incidental to otherwise legal activities down to the documented baseline. These incidental take authorizations are contingent on adequate implementation of all commitments required by this Agreement. Chiricahua leopard frog capture, translocation, temporary holding and propagation activities associated with this Agreement will be accomplished by qualified individuals and agencies with appropriate Federal and State permits. Take associated with Chiricahua leopard frog capture, translocation, temporary holding and propagation activities associated with this Agreement will be addressed separately under the individual permits and are not authorized under this Agreement's section 10(a)(1)(A) Enhancement of Survival Permit. Incidental take authority below documented baseline condition would need to be obtained through another ESA permitting process such as a Section 7 consultation or a Section 10(a)(1)(B) ESA permit.

2.12.4 Assurances Provided in Case of Agreement Amendments

Through this Agreement, the USFWS provides the Department and Participants with the following assurances that no additional conservation measures, nor additional land, water, or resource use restrictions, beyond those voluntarily agreed to, will be required for populations covered by this Agreement. These assurances apply to the Department and Participants only

where the Agreement and any associated Certificate of Inclusion are being properly implemented. The assurances also apply only with respect to the Chiricahua leopard frog.

If additional conservation and mitigation measures are deemed necessary, the USFWS may request additional measures of the Department and Participants, as applicable, but only if such measures are limited to modifications within the conservation habitat areas, if any, for the affected species and maintain the original terms of the Safe Harbor Agreement. However, where additional conservation measures might need to be implemented by Participants, the parties to this Agreement also recognize, in the spirit of the Agreement, that any such measures would be developed jointly and cooperatively by the Department, the USFWS, and the enrolled landowner or landowners. Additional conservation measures will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the Agreement without the consent of the Department and Participants, as applicable.

3.0 Administrative Procedures

This section describes various administrative procedures under the Agreement, such as amendment of its associated permit, permit termination and duration, and involvement in the Agreement by State agencies.

3.1 Development and Approval of Certificates of Inclusion

When any landowner is interested in enrolling lands under this Agreement (i.e., is willing to become a Participating Landowner, Participating Neighbor, or Participating State Agency), the following procedures shall be implemented:

First, the specific conservation measures to be implemented by that landowner will be developed jointly by the landowner and the Department, with the assistance of USFWS, as necessary. Concurrently, a baseline condition for the aquatic sites being considered for enrollment will be determined per established survey protocol (Appendix D). Where appropriate (i.e., in those circumstances described in Section 3.2), the Arizona State Land Department (ASLD) should be included in this process. Conservation measures under the Agreement will include, at a minimum, applicable measures as described in this section and Sections 2.5 and 2.9.2 of this Agreement. To achieve a net conservation benefit, they should also include any conservation opportunities available under the discretionary measures described in Section 2.6, as appropriate. Once specific measures are agreed to, the landowner, the Department, and ASLD, as applicable, will complete the Certificate of Inclusion and associated Documentation of Participation Form and submit these forms, with supporting documentation of the baseline condition, to the USFWS for review within 15 days of receipt of a proposed Certificate of Inclusion. The Department will contact neighboring landowners directly to see if they are interested in participating in the Agreement as a Participating Landowner or Participating Neighbor.

Within 30 days of receipt of a proposed Certificate of Inclusion, the USFWS will notify the Department, the affected landowner, and the ASLD, as applicable, in writing, of its concurrence concerning the landowner's baseline and enrollment. If necessary, the USFWS will meet with the

Department and the potential Participant to discuss any issues related to baseline conditions or the Certificate of Inclusion and Documentation of Participation Form.

Entry into this Agreement by any landowner is entirely voluntary. Thus, if agreement cannot be reached between the parties described above with respect to the enrollment application, the affected landowner is under no obligation to enter the Agreement.

3.2 State Agency Participation

Any state agency that owns lands in the covered area may enroll as a Participating State Agency. It is anticipated that in addition to the Department, the ASLD, which manages the State trust lands, and Arizona State Parks Department would be the primary State agencies that have appropriate aquatic habitats for enrollment.

The ASLD manages grazing leases on much of the State trust lands and the lease holder owns interest in the allotment improvements. Thus, cooperation in this Agreement by ASLD will be desirable to the extent that any aquatic sites occur on State lands that are owned/used by a leaseholder may be enrolled under the Agreement. Obligations incurred under this Agreement by a lessee primarily involve appropriate management of aquatic sites supporting Chiricahua leopard frogs, appropriate management of livestock use at such sites, and notification requirements. Since these types of obligations will typically involve cattle operations, most obligations under the Agreement in cases where State-leased lands are enrolled under the program will be borne by the lessee rather than the administering ASLD. Nevertheless, certain commitments by the State agency in such cases may also be appropriate, primarily: (1) granting permission to personnel of the Department, USFWS, other State and Federal agencies, academic institutions, and the lessee to enter State lands to carry out the conservation program; and (2) notification to the Agreement's Administrators if State lands enrolled under the Agreement are to be sold or altered significantly.

Consequently, the parties to this Agreement (the USFWS, Department, and Participating Landowners or Participating Neighbors, as applicable) shall make every reasonable effort to contact any affected State agency when State-leased lands are being considered for enrollment in the Agreement, and to include the agency in any discussions concerning such enrollment and concerning commitments associated with such enrollment. Furthermore, where State-leased lands are to be enrolled in the Agreement, the affected agency or agencies should be encouraged to formally enter into the Agreement by becoming a signatory to any Certificate of Inclusion issued by the Department to the owner/permittee utilizing the State-leased lands (see Appendices A and B). By becoming a signatory to the Certificate of Inclusion, a State agency would become a Participating State Agency as described in Section 2.0 of the Agreement. Those goals notwithstanding, the parties to this Agreement understand that no obligation of any kind is imposed on any State agency by entry into this Agreement by the Department and the USFWS; as for all landowners, participation in this Agreement by State agencies is entirely voluntary.

3.3 Agreement Amendments and Termination

Amendments to the Agreement. The USFWS, Department, or a Participant may, from time to time, elect to amend this Agreement (for a Participant this would mean amending the associated

Certificate of Inclusion). Any party to the Agreement may propose amendments by providing written notice to the other parties explaining the proposed amendment and the reasons for the amendment. Approval of an amendment will require the written consent of all parties and must be consistent with the assurances described in Section 2.12.3 of the Agreement. Any proposed amendment to the Agreement or an associated Certificate of Inclusion will be considered effective as of the date that the Department, USFWS, and any and all affected Participants have agreed in writing to the amendment.

Amendments to the permit. The Department's Section 10(a)(1)(A) permit may be amended in accordance with all applicable legal requirements in force at the time of the amendment, including, but not limited to, the Act, National Environmental Policy Act, and USFWS permit regulations (currently these are codified in 50 CFR, Parts 13 and 17). Amendment of the permit would require, at a minimum: (1) a written explanation of why the amendment is needed; (2) an explanation of what, if any, effects the amendment would have on the Chiricahua leopard frog; and (3) a *Federal Register* notice of the proposed amendment and 30-day public comment period.

Minor or Administrative Amendments. Minor or Administrative Amendments involve routine administrative revisions, changes to the operation and management program, or minor changes to the Agreement, which do not affect take provisions of the Agreement. Such minor amendments do not materially alter the management actions or the terms of the Section 10(a)(1)(A) Enhancement of Survival Permit associated with this Agreement. Upon written request of the Department, the USFWS is authorized to approve minor amendments to this Agreement, if the amendment does not conflict with the primary purpose of this Agreement as stated in Sections 1.1 and 2.0 herein.

Early termination of a Participant. The parties to this Agreement recognize that a Participant may occasionally face circumstances beyond their control that result in the need for the landowner to terminate his or her conservation commitments under the Agreement prior to completion of the required conservation period. A Participant who wishes to terminate enrollment in the Agreement may do so by giving the Department written notice. Upon such notification, any party to the Agreement may request a meeting of all affected parties to discuss pertinent or final issues, if any, that may be raised by the landowner's termination announcement; all parties to the Agreement will honor any such request within 60 days of the Department's receipt of notification. The Agreement and Certificate of Inclusion with respect to that Participating Landowner, Neighbor, or State Agency will then be considered terminated 60 days after the Department's receipt of notification, provided that all obligations of the landowner requesting termination have been satisfied (as described in the last paragraph of this section). The Participant remains authorized under the Enhancement of Survival permit for incidental take during the 60-day period prior to termination. If a longer period is needed by the Participant to terminate participation in the Agreement, this may be negotiated between the Department and the Participant. If the Agreement and any associated Certificate of Inclusion applies to more than one Chiricahua leopard frog population site on the affected property, early termination may be specific to one or more sites while others remain subject to the Agreement. In this case, however, the notice of early termination must specify which sites to which the request refers.

Additionally, a Participant may receive funds for conservation actions covered under their Certificate of Inclusion and Documentation of Participation. Each funding source may have additional requirements and agreements that have been entered into by a Participant to implement conservation activities on enrolled sites. Voluntary termination of a Participant's Certificate of Inclusion and Documentation of Participation forms does not release a Participant from further obligations in agreements entered into for funding sources, such as Natural Resource Conservation Service or Partners for Fish and Wildlife. Therefore, Participants are advised to keep all Parties to the Agreement and potential funding sources apprised of any additional agreements that concern covered sites under this Agreement to avoid additional complications for the landowner, the Department, the USFWS, and any potential funding agencies/sources.

Voluntary termination of the permit. This Agreement and its associated Section 10(a)(1)(A) permit may be terminated at any time by the Department or the USFWS acting jointly or unilaterally, if, in the view of either or both parties, the Agreement and its permit are no longer necessary, desirable, or applicable. The Department or the USFWS may terminate the permit by providing written notice to the other party of its intention to terminate the permit and a written explanation of the reason for termination; such notice shall be provided not less than 90 days prior to the effective date of termination. Upon such notification, either party to the Agreement may request a meeting of both parties to discuss pertinent or final issues, if any, that may be raised by the termination announcement; each party to the Agreement will honor any such request within the 90-day notification period. The Agreement and its associated Section 10(a)(1)(A) permit will then be considered terminated as of the end of the 90-day period, provided that all obligations of the party requesting termination have been satisfied (as described in the next paragraph). In addition, the party requesting termination of the Agreement will, within 60 days of the effective date of termination, notify all Participants who are party to the Agreement through active Certificates of Inclusion of the pending termination. Note, however, that the provisions of this paragraph apply only to voluntary termination of the permit. Procedures for suspension or revocation of the permit by the USFWS for any failure of the Department or a Participant to implement the terms of the Agreement or permit are addressed in Section 3.6.

Requirements for early or voluntary termination of the Permit. The parties to this Agreement understand that early or voluntary termination of the Agreement or its associated Section 10(a)(1)(A) permit as described above is allowable only if the party requesting termination has satisfied all conservation commitments required by the Agreement, any associated Certificate of Inclusion, and the terms and conditions of the permit as of the effective date of termination of the Agreement or Certificate, as applicable. Furthermore, any party to the Agreement requesting early or voluntary termination understands that the benefits enjoyed by that party under the Agreement—regulatory or otherwise—also cease as of the effective date of termination.

Note that these early or voluntary termination sections do not supersede any agreements established as part of funding arrangements for conservation related activities. In addition, any return to baseline conditions must be made prior to the effective date of termination and should be coordinated between the Participant, the Department, and the USFWS to allow time to salvage Chiricahua leopard frogs from sites prior to returning them to baseline conditions.

3.4 Transfer of Benefits

By signature of a Certificate of Inclusion, a Participant agrees to notify the Department if ownership of a property covered by the Agreement is to be transferred to another landowner. This notification shall be provided at least 30 days in advance of any such transfer. If a Participant transfers ownership of the affected property, the Department and USFWS will regard the new property owner as having the same rights and obligations as the original property owner if the new owner agrees to become a party to the original Agreement. Actions taken by the new Participating Landowner, Neighbor, or State Agency that result in take of Chiricahua leopard frogs will be authorized if the new Participant maintains the terms and conditions of the original Agreement. If the new property owner does not become a party to the Agreement, the new property owner would neither incur responsibilities under the Agreement nor receive any assurances relative to “take” restrictions under Section 9 of the Act. After any notification of change in ownership, the Department will contact the new or prospective property owner to explain the Agreement and to determine whether the new property owner would like to continue the original Agreement or enter into a new Agreement. When a new property owner assumes the obligations under the existing Agreement, the Department and USFWS will honor the terms and conditions of the original Agreement.

3.5 Permit Severability

Each Certificate of Inclusion issued by the Department to a Participant will be severable with respect to the Department’s Section 10(a)(1)(A) permit and with respect to Certificates of Inclusion issued by the Department to other Participants. Thus, failure on the part of one landowner may result in revocation of that landowner’s Certificate, but shall not affect the rights and obligations of other landowners under their respective Certificates. Nor will it affect the Department’s permit, provided that the Department is itself otherwise in compliance with all terms and conditions of the permit and the Agreement.

3.6 Certificate and Permit Suspension and Revocation

3.6.1 Permit

Similarly, the USFWS may suspend or revoke the Department’s Section 10(a)(1)(A) permit for cause in accordance with currently applicable Federal regulation (50 CFR Parts 13 and 17), or with any laws and regulations in force at the time of such suspension or revocation. Any such suspension or revocation must be consistent with the regulatory assurances described in Section 2.12.3 of the Agreement. However, the USFWS and the Department will do everything possible to avoid this situation.

3.6.2 Certificate

The Department may suspend or revoke a landowner’s Certificate of Inclusion only if: (1) the landowner has failed to satisfy a specific conservation commitment or commitments for which he or she is responsible; (2) the Department has made reasonable, good-faith efforts to cooperatively work with the landowner to correct the deficiency; (3) the deficiency remains uncorrected, even after the Department’s good-faith efforts; and (4) written notice has been provided to the affected landowner alerting the landowner of the pending suspension or revocation a minimum of 30 days prior to the effective date of the suspension or revocation. However, the Department will be

bound by the terms and condition of their Section 10(a)(1)(A) Enhancement of Survival Permit and must comply with applicable Federal regulation (50 CFR Parts 13 and 17), or with any laws and regulations in force at the time that a Certificate of Inclusion suspension or revocation may be necessary to ensure that the Department's Section 10(a)(1)(A) Enhancement of Survival Permit is not suspended or revoked, as described above. Therefore, the Department may suspend or revoke any landowner's Certificate of Inclusion for violating the terms of the Agreement to ensure that their Permit remains valid for all other Participants.

3.7 Duration of Permit and Assurances

3.7.1 Permit

This Agreement and its associated Section 10(a)(1)(A) permit will run for a 50-year term from their effective dates.¹ This means that the Section 10(a)(1)(A) permit will expire in 50 years, so long as the parties to the Agreement (the Department and the USFWS) continue to implement the Agreement's provisions through mutual consent and so long as neither party terminates the Agreement under its voluntary termination procedures (as described in Section 3.3) or permit revocation procedures (as described in Section 3.6).

3.7.2 Assurances

The authorities and assurances of the Section 10(a)(1)(A) permit will apply to the Department from the effective date of the permit and will last so long as the permit remains in effect. For a Participating Landowner, the authorities and assurances of the permit will apply from the effective date of their Certificate of Inclusion until either: (1) the end of the required conservation period plus two years as described in Section 2.5.3 (in the case of a landowner who elects to terminate his or her conservation commitments at that time); or (2) so long as the permit is needed and remains in effect (in the case of a landowner who continues indefinitely to implement his or her conservation commitments beyond the required conservation period). Participating Neighbors will receive regulatory assurances from the effective date of his or her Certificate of Inclusion to the termination of their participation in the Agreement. If the required conservation period of 10 years has been met, the Participating Neighbor will have one year of assurance in which to bring the enrolled sites back to baseline conditions or renew participation in the Agreement. Since early termination results in the loss of assurances on the date of termination, arrangements shall be made with the Department and the USFWS to return any enrolled sites back to baseline conditions before the termination date. This will provide an opportunity to salvage any Chiricahua leopard frogs from such a site. Assurances for Participating State Agencies will be similar to that of a Participating Landowner or Participating Neighbor depending on the conservation commitment agreed to in the Certificate of Inclusion. Assurances will be documented on the Certificate of Inclusion on a case-by-case basis for Participating State Agencies.

3.8 Permit and Certificate Renewal

3.8.1 Permit

This Agreement and the associated Section 10(a)(1)(A) permit will expire in 50 years. However, if the need still exists, this Agreement and its associated permit may be renewed or extended. As assurances for Participants can only be given for the period that the permit is valid, no Certificates of Inclusion shall be issued with assurances past the expiration date of the permit.

¹ If the species covered by this Agreement and its associated Section 10(a)(1)(A) permit is removed from ESA listing due to recovery of the species, this Agreement and the permit shall be terminated within 90 days by written notice from the USFWS to the Department, and within 90 days of receiving such notice the Department shall terminate by written notice to each Participant all Certificates of Inclusion pertaining to this Agreement. If delisting is related to judicial, legislative, or regulatory reasons, the USFWS and the Department will meet to decide whether to terminate the Agreement and its associated permit as outlined above.

An extension or renewal of the Agreement and its associated permit must be in place prior to any assurances being given that last past the duration of the original permit. If the Section 10(a)(1)(A) permit is extended or renewed, the baseline conditions established on any participant's property that has a valid Certificate of Inclusion shall be carried forward with the renewal or extension of the permit. Permit extension can only occur for a maximum of two years at a time, up to a maximum of six years total. Permit renewal will be accomplished through the development of a new Agreement and the issuance of a new Section 10(a)(1)(A) permit. Any extensions or renewals will recognize the original baseline conditions for enrolled sites that have valid Certificates of Inclusion being properly implemented at the time of the extension or renewal.

3.8.2 Certificate

The Department may renew Certificates of Inclusion on a continuing basis throughout the life of the permit as long as the period of assurance does not extend past the expiration date of the Section 10(a)(1)(A) permit. Participating Landowners may renew their Certificate of Inclusion with the original baseline condition determination after the conservation period agreed to on the Certificate of Inclusion has been met and prior to the end of the 2-year period of assurances, provided the minimum 10-year required conservation period has been met, the enrolled sites have not been returned to baseline conditions, monitoring has continued, and all conservation enhancements are still in place. If the 2-year period of assurances has elapsed, a new baseline condition determination must be made and a new Certificate of Inclusion needs to be agreed upon.

Participating Neighbors may renew their Certificate of Inclusion with the original baseline condition determination after the conservation period agreed to on the Certificate of Inclusion has been met and prior to the end of the 1-year period of assurances, provided the minimum 10-year required conservation period has been met, the enrolled sites have not been returned to baseline conditions, monitoring has continued, and all conservation enhancements are still in place. If the 1-year period of assurances has elapsed, a new baseline condition determination must be made and a new Certificate of Inclusion must be agreed upon.

A Participating State Agency may renew their Certificate of Inclusion prior to the expiration date of the existing certificate to (1) maintain continuous assurances for their properties and (2) maintain the original baseline conditions. In practice, a 60-day grace period for renewal will exist for all Participants provided the enrolled sites have not been returned to baseline conditions and that no detrimental actions have been taken by the Participant. Any Participant that has met the initial 10-year required conservation period and renews their certificate of inclusion will not have an additional required conservation period to get the 2-year or 1-year period of assurances past termination of participation for Participating Landowners and Participating Neighbors, respectively, provided that the renewal is with the original baseline conditions. If the participant allows his Certificate of Inclusion to lapse and goes beyond the period of assurances, or at any time takes the property back to baseline conditions, any new Certificate of Inclusion must have a new baseline condition determination and a new 10-year required conservation period.

3.9 Permit Transfer and Succession

Although not anticipated, in the event that the Department should cease operations or otherwise be unable to carry out its responsibilities as the permit holder under this Agreement, the Department's Section 10(a)(1)(A) permit may be transferred to another entity. Transfer or succession of the permit would be in accordance with Federal regulations applicable or in force at the time of the transfer (at present these are codified at 50 CFR 13.24 and 13.25). Although a permit successor is not contemplated or named in this Agreement, an appropriate permit successor in the event of a transfer could generally include a suitable State agency or conservation organization. In the event of a transfer of the permit all Participants will be notified, and they may elect to terminate their Certificates of Inclusion.

3.10 Coordination with 4(d) Rule

In its final rule to list the Chiricahua leopard frog under the Act, the USFWS included a rule under Section 4(d) of the Act that exempts from the Section 9 regulations incidental take of Chiricahua leopard frogs resulting from livestock use of or maintenance activities at livestock tanks located on private, State, or tribal lands (USFWS 2002). This rule and the Section 10(a)(1)(A) permit issued in association with this Agreement could result in redundant, overlapping, or contradictory take authorities. The Section 4(d) rule will take precedence over the Section 10(a)(1)(A) permit associated with this Agreement. If the Section 4(d) rule is no longer in affect for any reason, e.g. reclassification of the species from Threatened to Endangered status, the USFWS intends that the Section 10(a)(1)(A) permit will govern with respect to authorized activities (see Sections 2.6 and 2.12.2) within the Agreement's covered area.

3.11 Recovery of Species

The goal of the Act, and the various policies and programs implemented under the Act, is the recovery of species that are listed as threatened or endangered. Therefore, the intent of this Agreement is to make a contribution toward recovery and delisting of the Chiricahua leopard frog. If the Chiricahua leopard frog is delisted due to recovery during the term of the section 10(a)(1)(A) permit, the USFWS will encourage the Department and the Agreement participants to maintain their conservation efforts for five years after the final rule to delist the Chiricahua leopard frog is published. This 5-year period is consistent with the requirement for monitoring of recovered species removed from the endangered species list as stated in section 4(g)(1) of the Act. Maintaining the conservation and monitoring efforts of the Agreement would be voluntary on the part of the Department and Agreement Participants.

3.12 Legal Recitations

Remedies. Each party to this Agreement shall have all remedies otherwise available to enforce the terms of the Agreement and the permit, except that no party shall be liable in damages for any breach of the Agreement, any performance or failure to perform an obligation under the Agreement, or any other cause of action arising from the Agreement.

Availability of appropriated funds. Implementation of this Agreement is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the parties to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury. The parties acknowledge that the USFWS

will not be required under this Agreement to expend any USFWS appropriated funds unless and until an authorized official of that agency affirmatively acts to commit such expenditures as evidenced in writing.

Third party beneficiaries. This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to the Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of the Agreement. The duties, obligations, and responsibilities of the parties to the Agreement with respect to third parties shall remain as imposed under existing law.

Compliance with Federal law. The terms of this Agreement shall be governed by and construed in accordance with applicable Federal law. Nothing in the Agreement is intended to limit the authority of the USFWS to fulfill its responsibilities under Federal law. All activities undertaken pursuant to the Agreement or the permit must be in accordance with all applicable State and Federal laws and regulations.

Notices/reports. Any notices or reports required by this Agreement shall be delivered in writing to the Administrators of the Agreement as listed in Section 2.0 and Section 3.0 of the Agreement.

3.13 Signatories

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Safe Harbor Agreement to be in effect as of the date last signed below.

(Poi) BY Steve Kitzell
Director
Arizona Game and Fish Department
Phoenix, Arizona

Date 9/25/06

BY [Signature]
Acting Deputy Regional Director, Region 2
U.S. Fish and Wildlife Service
Albuquerque, New Mexico

Date 9.29.06

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Appendix A

Certificate of Inclusion
In The
Safe Harbor Agreement
For the Chiricahua Leopard Frog (*Rana chiricahuensis*)
Between the Arizona Game and Fish Department and U.S. Fish and Wildlife Service

This certifies that the Participating Landowner, Participating Neighbor, or Participating State Agency, as applicable, who owns or administers the property described below, is included within the scope of Permit No. [insert no.], issued by the U.S. Fish and Wildlife Service on [insert date] to the Arizona Game and Fish Department (Department) under the authority of Section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended, 16 U.S.C. 15389(a)(1)(A). Pursuant to that permit and this Certificate, the Participating Landowner, Participating Neighbor, or Participating State Agency, as defined in Section 2.0, Section 2.10.1, and Section 3.2, respectively, of the Department's Safe Harbor Agreement (Agreement), is authorized to cause incidental take of Chiricahua leopard frogs during the course of management activities described in Section 2.6 and Section 2.12.2 of the Agreement on the specific lands identified in this Certificate. Such permit authorization is subject to the carrying out of conservation measures described in this Certificate, the terms and conditions of the permit, and the terms and conditions of the Agreement entered into by the Arizona Game & Fish Department and the U.S. Fish and Wildlife Service. By signing this Certificate of Inclusion, the Participating Landowner, Participating Neighbor, or Participating State Agency, as applicable, agrees to carry out all assigned conservation measures as described in the Agreement and Certificate for a period of [insert no.] years.

This form documents the specific conservation commitments and enrolled sites involved for the Safe Harbor Agreement for the Chiricahua leopard frog in Arizona. Fill in the form using footnote directions. Use additional sheets, if necessary.

A. Type of Participant(s)¹: Participating Landowner ___ Participating State Agency ___
 Participating Neighbor ___ Arizona Game & Fish Commission ___

B. Participating Landowner's/Neighbor's Name and Address: _____

C. Participating State Agency's Name and Address:

D. Legal Description or Map Showing Baseline Conditions (if any) & Enrolled sites _____

E. Conservation Commitments² _____

F. Required Conservation Period³ _____

¹Check as applicable. If joint Certificate of Inclusion for a Participating Landowner/Neighbor and a Participating State Agency, check both.

²On Line E, specify any conservation commitments to be implemented by each participant in addition to the measures described in these sections. Include Chiricahua leopard frog translocations, if any, allowed on participant's lands; what, if any, conservation options as described in Section 2.6 of the Agreement will be implemented; and any funding commitments.

³Specify the number of years the conservation commitments described on Line E will be maintained or carried out (10-year minimum).

Participating Landowner/Neighbor **[insert which]**

Date

Participating State Agency
[Name agency, person signing, title]

Date

Director
Arizona Game and Fish Department

Date

Concurrence, U.S. Fish & Wildlife Service
Field Supervisor, Arizona Ecological Services Office

Date

Appendix B

Documentation of Participation Form For Safe Harbor Agreement with Assurances

This form documents the specific conservation commitments and enrolled sites involved for the Safe Harbor Agreement (Agreement) entered into with the Arizona Game and Fish Department and USFWS by the Participating Landowner, Participating Neighbor, or Participating State Agency, as applicable, named on Lines B & C. Fill in the form using footnote directions. Use additional sheets, if necessary. When completed, attach the form to the Certificate of Inclusion of which it is a part, together with any maps and additional sheets used.

A. Type of Participant(s)¹:

Participating Landowner	_____
Participating Neighbor	_____
Participating State Agency	_____

B. Participating Landowner's/Neighbor's Name and Address: _____

C. Participating State Agency's Name and Address: _____

D. Legal Description or Map Showing Baseline Conditions (if any) & Enrolled sites _____

E. Conservation Commitments² _____

F. Required Conservation Period³ _____

G. Ending Date or Conservation Period _____

Director	Date
Arizona Game and Fish Department	

Participating Landowner/Neighbor [Specify which]	Date
---	------

Participating State Agency	Date
[Name agency, person signing, title]	

¹ Check as applicable. If joint Certificate of Inclusion for a Participating Landowner/Neighbor and a Participating State Agency, check both.

² On Line E, specify any conservation commitments to be implemented by each participant indicated in Lines B & C in addition to the measures described in these sections. Include Chiricahua leopard frog reestablishments/translocations, if any, allowed at enrolled sites; what, if any, conservation options as described in section 2.5.5 of the Agreement will be implemented; and any funding commitments.

³ Specify the number of years the conservation commitments described on Line E will be maintained or carried out (10-year minimum).

Appendix C

Cooperator Agreement for Chiricahua Leopard Frog

**By and Between
the U.S. Fish and Wildlife Service, Arizona Game and Fish Department,
and [insert name of agency or organization]**

**Pursuant to the Safe Harbor Agreement
Between the U.S. Fish and Wildlife Service and Arizona Game and Fish Department**

This Cooperator Agreement for Chiricahua Leopard Frog (“Cooperative”) is made and entered into by and between the U.S. Fish and Wildlife Service, hereinafter called the USFWS, Arizona Game and Fish Department, hereinafter called Department, and [enter name of agency and organization], hereinafter called [enter abbreviation or acronym], to establish a basis for cooperation between these agencies and organizations in implementation of the Safe Harbor Agreement, hereinafter called the Safe Harbor Agreement, entered into between the USFWS and Department on [enter date] for the conservation of the Chiricahua leopard frog (*Rana chiricahuensis*) in Arizona.

WITNESSETH

WHEREAS, the Chiricahua leopard frog, was listed as a threatened species under the Federal Endangered Species Act of 1973, as amended (Act), effective on July 13, 2002; and,

WHEREAS, the USFWS and Department have entered into the Safe Harbor Agreement pursuant to the authorities of Section 10(a)(1)(A) of the Act and associated USFWS policy and Federal regulation to establish a conservation program for the Chiricahua leopard frog in Arizona and to provide for regulatory assurances to non-Federal landowners who own lands in Arizona and who enter into the Safe Harbor Agreement with the USFWS and Department; and,

WHEREAS, the USFWS and Department are signatories to the Safe Harbor Agreement, while individual non-Federal landowners within Arizona may participate in the Safe Harbor Agreement’s conservation program and receive its regulatory assurances through a Certificate of Inclusion issued by the Department to the participating landowner; and,

WHEREAS, the Safe Harbor Agreement contemplates that cooperation by agencies and organizations in addition to the signatories and participating landowners will be necessary and desirable in ensuring comprehensive implementation of the Safe Harbor Agreement and long-term conservation of the Chiricahua leopard frog in Arizona; and,

WHEREAS, other organizations or Federal or State agencies who are not signatories to the Safe Harbor Agreement may, nevertheless, have certain regulatory or land management authorities or responsibilities in Arizona, or may themselves be engaged in Chiricahua leopard frog conservation efforts within the State; and,

WHEREAS, such other agencies and organizations (including, but not limited, to the Arizona State Land Department; U.S. Forest Service; U.S. Bureau of Land Management; U.S. Geological Survey, Biological Resources Division; University of Arizona, Tucson; and The Nature Conservancy) may elect or desire to become cooperators in the Safe Harbor Agreement’s conservation program;

NOW, THEREFORE, the parties to this Agreement mutually agree and understand as follows:

I. Purpose

The purpose of this Cooperative Conservation Agreement for the Chiricahua Leopard Frog is to establish a general framework for cooperation among the parties to the Agreement with respect to the Safe Harbor Agreement and for participation in the Safe Harbor Agreement's Chiricahua leopard frog conservation program by [enter name of agency or organization]. The parties to the Cooperative propose to work together to implement the Chiricahua leopard frog conservation program described in the Safe Harbor Agreement and generally to cooperate to establish and foster stable Chiricahua leopard frog populations in Arizona.

II. Policies and Principles

This Cooperative recognizes the following policies and principles:

A. Participation in the Safe Harbor Agreement's Chiricahua leopard frog conservation program by any cooperator not a signatory to the Safe Harbor Agreement and entry into this Agreement by any such cooperator is entirely voluntary and is subject to the sole discretion of the cooperator. Entry into the Agreement by the Department and USFWS is also voluntary and subject to their sole discretion.

B. Unless otherwise indicated, specific work projects or activities that involve the transfer of funds, services, or property among the parties to this Cooperative will require the execution of separate agreements or contracts contingent upon the availability of funds as appropriated by Congress, any applicable State legislature, or other funding entity, as applicable.

C. This Cooperative in no way restricts its parties from participating in similar activities or arrangements with other public or private agencies, organizations, or individuals, nor shall obligate its parties to expend appropriations or enter into any contract or other obligations.

D. This Cooperative does not modify or supercede the existing statutory authority or direction of any party to the Cooperative.

E. This Cooperative may be modified or amended upon written request of any party hereto and the subsequent written concurrence of all the parties. Participation in this Cooperative by any party may be terminated with a 60-day written notice by that party to the other parties. Unless terminated under the terms of this paragraph, this Cooperative shall remain in full force and effect until the termination of the Permit as described in Section 3.3 of the Safe Harbor Agreement.

III. Responsibilities of the Parties

The responsibilities of the parties to this Cooperative are as follows.

U.S. Fish and Wildlife Service. The USFWS shall perform all obligations and implement all measures assigned to it under the Safe Harbor Agreement, and shall perform the following additional obligations and measures as assigned to it under the terms of this Cooperative.

- A. [Enter any additional USFWS obligations or responsibilities].
- B. [Enter any additional USFWS obligations or responsibilities].

Arizona Game and Fish Department. The Department shall perform all obligations and implement all measures as assigned to it under the Safe Harbor Agreement, and shall perform the following additional obligations and measures as assigned to it under the terms of this Cooperative.

- A. [Enter any additional Department obligations or responsibilities].
- B. [Enter any additional Department obligations or responsibilities].

[Enter name of agency or organization]. Under the terms of this Cooperative, [enter name of agency or organization] shall perform all activities as described in Section 2.10 of the Safe Harbor Agreement (as described in measures A and B below), or as otherwise assigned to it to it under the terms of this Cooperative (as described in measures C and D below). [Enter name of agency or organization] shall, therefore:

A. Subject to its discretion, provide in-kind services (i.e., staff time, as available) to support conservation activities under the Safe Harbor Agreement, including, but not limited to: (i) Chiricahua leopard frog management, reestablishment, and translocation activities; (ii) biological monitoring activities; and (iii) operation of Chiricahua leopard frog propagation facilities.

B. Provide funding for Chiricahua leopard frog conservation activities as described in the Safe Harbor Agreement as appropriate and available from programs administered by [enter name of agency or organization].

- C. [Enter any additional obligations or responsibilities].
- D. [Enter any additional obligations or responsibilities].

[The obligations and responsibilities for, Safe Harbor Agreement program cooperators described in measures A and B above are as generally described in Section 2.10 of the Safe Harbor Agreement. However, it is anticipated that the specific conservation measures and other obligations and responsibilities that individual cooperators may consent to under this Cooperative will be determined jointly by the Department, USFWS, and cooperator during discussions concerning entry into the Cooperative by these parties. Therefore, the obligations and responsibilities of the USFWS, Department, and other Safe Harbor Agreement cooperators under this section of the Cooperative as described above should be revised and specified as appropriate.]

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Cooperative Agreement for Chiricahua Leopard Frog Conservation to be in effect as of the date last signed below.

BY _____
Director
Arizona Game and Fish Department
Phoenix, Arizona

Date _____

Notarized _____

BY _____
Regional Director
U.S. Fish and Wildlife Service
Albuquerque, New Mexico

Date _____

Notarized _____

BY _____
[Enter title of person signing]
[Enter name of agency or organization]
[Enter location of agency or organization]

Date _____

Notarized _____

Appendix D

June 2002

***Rana chiricahuensis* - Fish and Wildlife Service/Arizona Game and Fish Department/New Mexico Department of Game and Fish Survey Protocol for Project Evaluation:**

Permits/Certification: Surveyors must be permitted by the Fish and Wildlife Service and the appropriate State agency. To obtain a permit, surveyors must attend Fish and Wildlife Service/State approved certification training.

Procedure: Surveys shall include a night visit to all suitable habitats (see definition in Attachment 1) in the project's action area (the area affected directly and indirectly by the action). This will typically involve walking stream and river banks, along the edges of wet meadows, and around the perimeters of stock tanks and lakes in the action area. Surveys shall be carried out with flashlights/headlamps, and a dip net shall be used to sample for tadpoles and frogs concealed in undercut banks or at the base of emergent vegetation. Watch for frogs on banklines, but also floating in the water or visible on the bottom, and in areas away from water - particularly during or after rains. Surveyors shall also listen for the distinctive call of the Chiricahua leopard frog and watch for egg masses. Audible plops may indicate frogs are present, but their identity to species must be confirmed. Plops preceded by an escape call (Eeep) indicates bullfrog presence. Surveys shall be carried out from April through September, and when water temperatures are at least 12° C and winds are light or absent, which is when frogs are most active. A diurnal survey can substitute for a nocturnal survey, but if frogs are not detected, surveyors should return at night. In simple habitats, such as typical livestock tanks with little or no bankline and emergent cover, 2 diurnal surveys carried out 1-3 hours after sunrise can substitute for a nocturnal survey. If surveyors have valid State and Federal permits for collecting, and populations appear robust, a sample of up to 3 tadpoles should be collected as vouchers. Surveyors should note observations of fishes to species, if possible, bullfrogs, crayfish, salamanders, garter snakes to species, and other native frogs. Additional information on how to survey sites is contained in Attachment 1 (General Visual Encounter Survey Protocol- Arizona Game and Fish Department). Data should be recorded on standard field survey forms (Attachment 2), and data should be collected in accordance with the instructions for the form (Attachment 3).

Disease Prevention: To prevent inadvertent movement of disease or parasitic organisms among sites, surveys shall conform to the Declining Amphibians Population Task Force Fieldwork Code of Practice, with the exception that 10% bleach solution or 1% quaternary ammonia (Quat 128) should be used to clean equipment rather than 70% ethanol. The latest version (April 2002) is included as Attachment 4; however, surveyors should periodically check the following website (www.npwrc.usgs.gov/narcam/techinfo/dapftf.htm) for updates.

Survey Frequency: In simple habitats, such as stock tanks (not dry) with little or no bankline or emergent vegetation, a single nocturnal survey as described above will detect frogs, if they are present, over 90% of the time. Numbers of frogs detected are also likely a rough index of the relative abundance of frogs (Howland et al. 1997). In more complex sites, such as streams, rivers, and lakes with substantial vegetation or other cover, braided channels, or habitats that are difficult to access and survey, 2 or more surveys are warranted to accurately assess presence. As noted above, if diurnal rather than nocturnal surveys are conducted in simple systems such as typical livestock tanks with little or no bankline or emergent cover, at least 2 surveys should be conducted. Negative survey results, particularly in complex habitats, do not indicate with certainty the species is absent, but with repeated negative surveys, the likelihood of presence decreases.

Site occupancy often changes, particularly at stock tanks or other small, dynamic aquatic systems. Frogs may be extirpated due to drought, floods, disease, or other factors. Frogs can also immigrate to and colonize a site anytime during the warmer months (however, dispersal and colonization is most likely to

occur during the summer monsoons). If extant populations occur within dispersal distance¹ of a site under assessment supporting suitable habitat, colonization is likely to occur and surveys once a year or as part of project planning or BA/E preparation are warranted to assess presence/absence. Isolated, small populations are subject to extirpation and also warrant more frequent surveys to assess current status. Larger populations in natural systems are less likely to be extirpated, and as a result, survey results and assessments of presence are valid for a longer period of time. Similarly, larger sites that are unoccupied due to presence of nonnative predators are unlikely to be occupied in the foreseeable future and do not warrant frequent surveys.

¹Reasonable dispersal distance includes the following distances from occupied habitat to sites being evaluated for occupancy: a) within 1 mile overland, b) within 3 miles along an ephemeral or intermittent drainage, or c) within 5 miles along a perennial stream.

Literature Cited

Howland, J.M., M.J. Sredl, and J.E. Wallace. 1997. Validation of visual encounter surveys. Pages 27-44 in M.J. Sredl (ed). Ranid frog conservation and management. Arizona Game and Fish Department, Nongame and Endangered Wildlife Program, Technical Report 121.

Ranid tadpoles can be identified using:

Scott, N.J., and R.D. Jennings. 1985. The tadpoles of five species of New Mexican leopard frogs. The Museum of Southwestern Biology, Occasional Papers 3:1-21

Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. Amphibians and reptiles of New Mexico. University of New Mexico Press, Albuquerque. (See key by R. Altig at pages 15-16, and species accounts).

Recordings of the calls of Southwestern anurans, including the Chiricahua leopard frog, are found in:

Davidson, C. 1996. Frog and toad calls of the Rocky Mountains. Library of Natural Sounds, Cornell Laboratory of Ornithology, Ithaca, NY.

To identify Southwestern ranids and other anurans, see:

Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. Amphibians and reptiles of New Mexico. University of New Mexico Press, Albuquerque. (Especially see page 79, comparison of Southwestern leopard frogs).

Appendix D, Attachment 1
General Visual Encounter Survey Protocol
(Arizona Game and Fish Department, May 2002)

This standard visual encounter survey (VES) protocol is to be used for Chiricahua leopard frog surveys. This protocol was adopted from Heyer *et al.* (1994) and modified based on statewide ranid surveys in Arizona. The protocol is designed to be simple and repeatable with minimal training of personnel. However, all personnel should be trained and have survey technique checked periodically by a more experienced individual. The VES protocol described here will generate presence/absence data if used independently and generate information from which inferences about abundance and trends can be made if used in a statistically valid monitoring program. Before designing a monitoring program, it is recommended that the user consult Gibbs' (1996) program MONITOR or Gerodette's (1987, 1993) program TRENDS to test the statistical power of the proposed monitoring program.

Equipment needed:

The observer should always have the following when conducting a VES:

- a dip net
- a Global Positioning System unit set to read in the North American Datum 1927 (NAD27Conus) and the appropriate Universal Transverse Mercator (UTM) Zone
- a clipboard with the Chiricahua leopard frog Survey Form and instructions
- a pen with waterproof ink
- a time piece with a stop watch
- a pH meter
- 2 thermometers
- a conductivity meter
- a sling psychrometer or hygrometer
- binoculars
- the appropriate United States Geologic Survey quadrangles
- bleach or Quat128 for disinfecting all gear before and after surveying each site

Other suggested items are the following:

- a counter or clicker for keeping a tally of frogs observed
- a field notebook
- a headlamp or spotlight for night surveys
- rubber boots, hip waders, or chest waders depending on the habitat
- guides to identification of aquatic insects, fish, amphibian larvae, and adult amphibians
- a camera with slide film
- the appropriate land ownership maps
- database reports of historic surveys done in the area
- wind meter
- measuring tape
- "dead box" (whirl pack or ziplock bags, MS 222, and formalin for collecting specimens)
- pocket magnifier (to help identify tadpoles, look at mouthparts, etc.)
- tape player (for call backs and identifying calls)
- taped recordings of anuran calls (e.g. Davidson 1996)
- compass

Survey Protocol:

All “suitable” habitats within an action area (area to be affected by a project) should be surveyed.

Suitable Habitat is defined as follows: The frog is a habitat generalist that is found in cienegas, pools, beaver ponds, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 1,000 to 2,710 meters (m). They are occasionally found in livestock drinkers, irrigation sloughs and acequias, wells, abandoned swimming pools, back yard ponds, and mine adits. On the Coronado National Forest, the species occurs from 1,000 to 2,013 m. On the other Forests in Arizona, Chiricahua leopard frogs occur between 1,080 and 2,525 m. The frog uses permanent or nearly permanent pools and ponds for breeding. Most sites that support populations of this frog will hold water year long in most years. Time from hatching to metamorphosis is shorter in warm waters than cold water, thus water permanency is probably more important at higher elevation and in the northern portion of the species’ range. The species is rarely found in aquatic sites inhabited by nonnative fish, bullfrogs, or crayfish. However, in complex systems or large aquatic sites, Chiricahua leopard frog may occur with low densities of nonnative predators.

Surveys in suitable lentic and lotic systems should be conducted as follows:

Lentic systems: Upon approaching a survey site, stop approximately 20 m from the bank and search the site with binoculars. Search for frogs floating in water away from the bank as well as scanning the bank as best as possible. Walk around the entire perimeter of the site. If the entire perimeter is not surveyed, record the start and stop points as UTM coordinates. While walking along banks, use a dip net to sweep vegetation to flush frogs that do not respond to the observer’s approach. After the initial perimeter survey, search mud cracks, divots, under rocks and downed branches, and any other places where frogs might find cover. If the lentic system allows, walk though the site in a zigzag fashion to further flush frogs that may be sitting on the bottom of the water. Dip net to determine the presence of amphibian larvae, fish, and aquatic insects. Record all visual observations and audible “plops” of frogs escaping into water. Be careful not to count frogs more than once.

Lotic systems: Upon arriving at the starting point of a lotic system, record the starting point (or the most downstream point of the site) as UTM coordinates. Proceed upstream searching the banks, surrounding vegetation, and water along a minimum of 400 m of a lotic system. Search under rocks, downed branches, undercut banks, and any other places where frogs might find cover as best as possible. Where the lotic system allows, walk though the site in a zigzag fashion to further flush frogs that may be sitting on the bottom of the water. Dip net to determine the presence of amphibian larvae, fish, and aquatic insects. Record all visual observations and audible “plops” of frogs escaping into water. Be careful not to count frogs more than once.

Data collection: Data should be collected according to the Chiricahua Leopard Frog Survey Form Instructions (Attachment 3). Collect the following data at the specified locations, but note any major changes that occurred during the survey on the data form. Record the site name, UTM points, elevation, USGS quad, date, observers, and time the survey starts at the starting point of the survey. Record time the survey stops, time spent actively searching for herps, effort, any voucher specimens taken, water class, water type, search methods, water pH, relative humidity, air and water temperature, habitat characteristics (water clarity, vegetation types present, primary substrate, site width and/or length), weather conditions (wind, cloud cover, precipitation), land use, sign of potential vertebrate and invertebrate predators, as well as comments at the end point of the survey. Record any herps observations.

CHIRICAHUA LEOPARD FROG SURVEY FORM INSTRUCTIONS (May 2002)
Adapted from Riparian Herp Survey Form Instructions (Blomquist, Field, and Sredl) by B. Christman

- All fields are to be completed for historical sites and sites with target riparian species.
- Fields with an asterisk (*) are to be completed for every survey, regardless of results.
- If the site has not been previously surveyed to your knowledge, circle Y (yes) at the top of the form, otherwise circle N (no) and check the Locality Data in the Chiricahua Leopard Frog Database for accuracy.
- Check each Survey Form for completeness and clarity prior to sending to State Game and Fish Department and U.S. Fish and Wildlife Service for archiving.

Locality Data:

- *DATE: Record the date of the survey as eight numbers giving the month first, followed by the day then the year (e.g., 10-27-1993, 06-02-1994).
- *START TIME: Record the time the surveyor begins searching for frogs using a 24-hour clock.
- *STOP TIME: Record the time the surveyor stops searching for frogs using a 24-hour clock.
- *SEARCH TIME: Record the time spent actively searching for herps in minutes. The time recorded should include only time spent actively searching for herps and should not include time taken to write field notes, complete data sheets, read data sheet instructions, or other activities that may be performed while at the site.
- *OBSERVERS: List the names of all people present during the survey. Record the names as: first initial, second initial, and full last name (e.g., C. W. Painter).
- *SITE NAME: A "site" is any aquatic system (or portion of an aquatic system) that is > 1 mile from any other survey locality, or if less than 1 mile apart, represents a **distinct** change in aquatic habitat types (e.g., riverine vs. lake or cienega). Features with unique names are considered unique sites regardless of how far apart they are. Record the site name as it is marked on the United States Geologic Survey (USGS) quadrangle (hereafter quadrangle or quad). If the site is unnamed on the quad, refer to the corresponding land management map (e.g., U.S. Forest Service map, BLM Surface Management Responsibility map). If the site doesn't have a name, write "unnamed" preceding the feature; similarly, if the site is not marked on any map, write "unmarked" preceding the feature (e.g., Unnamed Wash, Unmarked Tank).
- SITE AT: This field should always be filled out for unnamed and unmarked sites and for large/long aquatic systems. For other localities, use this field *as needed* to enhance a site name (i.e., to verbally pin-point a site in space). Use such features as the nearest road crossing (e.g., San Francisco River at Alma bridge) stream confluence (e.g., East Fork Gila River at **Diamond Creek**) or topographic feature (e.g., San Francisco River **W of Glenwood**) in the description.
- *NUM: A site number is a unique number that, once assigned to a site, will always be used in conjunction with that site. Using the first two or three letters of the county and

number in an ascending order, or use National Forest, BLM, Tribal, or other abbreviations for the area where the data are collected.

- *UTM ZONE: Circle "11", "12" or "13" to note whether the **starting point** of the survey is in UTM grid zone 11 (west of 114 degrees longitude), 12 (east of 144 degrees and west of 108 degrees longitude) or 13 (east of 108 degrees longitude). Most of New Mexico, except for the extreme western portion, is in Zone 13. Most of Arizona is in Zone 12.
- *EASTING: Record the **starting point** of the survey as a 6-digit number. An example of a UTM x-coordinate is 295440E. Use a Global Positioning System (GPS) unit to measure the UTM coordinate. The UTM coordinate should be measured in North American Datum 1927 (NAD27Conus for Garmin units). Check that the GPS unit is set to the appropriate Zone. Alternatively, read the UTM coordinate from the quad. The first 3 numbers will be found on the top or bottom edge of the quad. These numbers are in 100,000-meter increments. The fourth number describes a point with 100-meters accuracy. The fifth number describes a point with 10-meters accuracy. The last number will be a zero. Use a coordinate scale to determine the fourth and fifth numbers.
- *NORTHING: Record the **starting point** of the survey as a 7-digit number. An example of a UTM y-coordinate is 4318410N. Use a Global Positioning System (GPS) unit to measure the UTM coordinate. The UTM coordinate should be measured in North American Datum 1927 (NAD27). Check that the GPS unit is set to the appropriate Zone (most of New Mexico is Zone 13). Alternatively, read the UTM coordinate from the quad. The first 4 numbers will be found along the left or right edge of the quad. These numbers are in 1,000,000-meter increments that tell you how far north of the equator you are. The fifth number describes a point with 100-meter accuracy. The sixth number describes a point with 10-meter accuracy. The last number will be a zero. Use a coordinate scale to determine the fifth and sixth numbers.
- *ELEVATION: Record the elevation at which the **starting point** of the survey occurs. Read the elevation off of the survey quad. Be sure to indicate the elevation in meters (m) or feet (ft.). The contour interval and unit (meters or feet) is written in the center of the bottom margin of the quadrangle. To convert feet to meters multiply by 0.3048.
- *QUAD(S): Record the quadrangle name as it appears on the quadrangle except in the situations outlined below. The name of the quadrangle appears in the upper and lower right hand corners of the quadrangle. If more than one quad is used in the survey, record the name of the quad in which the survey starts and note the name(s) of the other quad(s).
- Change the word "Mountain" to "Mtn" if it appears anywhere in the quad name other than the first word.
 - Composite polar coordinates (e.g., Southeast, Northwest) should be abbreviated (e.g., SE, NW) if they appear anywhere in the quad name other than the first word
 - Never abbreviate the four cardinal directions
- *MIN: Circle "7.5" or "15" to note whether the quadrangle series is 7.5 or 15 minutes. The series of the quadrangle can be found in the upper right hand corner of the quadrangle.

- *Quad YEAR:** Record the year of the quadrangle as it is printed in the lower right corner of the quadrangle. If more than one year appears on the map, record the year of the most recent revision.
- *COUNTY:** Record the state abbreviation (e.g., NM) followed by a hyphen and then the first 4 letters of the county (e.g., NM-CATR, NM-SIER). The county name can be found in the upper right corner of the quadrangle if the quad covers an area within a single county. For quads that cover areas in two or more counties, the names of the counties will appear somewhere in the topographic region of the quad. National Forest maps and Highway road maps, and the Atlas & Gazetteers are also useful in identifying counties.
- DIRECTIONS:** Write the directions to the site. **Keep them short and pertinent** (e.g., on FS 105 ~4.3 MI N of FS 105/FS 393 jct.). Directions are especially important when there are no roads or when existing roads are not marked on your maps. Use the directions N, NE, E, SE, S, SW, W, and NW instead of "turn right" or "veer left". This field can also contain any information or comments you want to convey to other field personnel. For example: "Dry 05/1994"; "Contact landowner for permission to access, also survey adjacent tank and draw"; etc.

Site and Visit Conditions:

- *EFFORT:** There are 5 categories of effort:

TP = Total Perimeter
 PP = Partial Perimeter
 LB = Left Bank
 RB = Right Bank
 BB = Both Banks

Circle all category(s) that apply. For all categories other than TP, record the distance surveyed in meters. The minimum acceptable survey distance for linear systems and large lentic systems (> 20 acres) is 400m (0.25 mile). Use category BB for any lotic system in which it is possible for you to access both banks (i.e., to meander from shore to shore). Use categories LB and RB for large, deep, and/or swiftly flowing lotic systems in which you are unable to meander shore to shore. LB and RB should always be filled out together even if you didn't survey, or were unable to access, one of the shores (e.g., LB = 0000m, RB = 0350m; RB = 0050m, LB = 0200m). Left and right banks are in reference to a person looking upstream. To calculate meters walked use a map wheel, range finder, or measuring tape. If using a map wheel to determine the distance in kilometers (or miles), be sure to use the scale on the map wheel that corresponds to the scale of your map or quad. Multiply your result by 1000 to get meters. Round the final result to the nearest 25-meter value. Alternatively, multiply the value generated from the map wheel in miles by 5,280 feet/mile. Multiply this new value by 0.3048 meters/foot. Remember, during the course of any survey, the surveyor should dip net, comb through bushes and grasses, turn over rocks, and scan the water and shore for herpetofauna.

- *VOUCHERS:** Note how many photo vouchers of specimens were taken at a site. Write the number as 2 digits (e.g., 00 or 13). Photo vouchers of specimens should be close-ups (i.e.,

macro shots) of diagnostic characters (e.g., thigh pattern and dorsolateral folds of leopard frogs, scale row of lateral stripes in garter snakes, dorsal and cranial views of toads). Note how many habitat photographs were taken at a site. Write the number as 2 digits (e.g., 00 or 02). Habitat photos should be taken at any site in which target riparian herps were found, at any historical locality regardless of results, and at any survey site that has suitable habitat even if no target riparian herps were found. Keep a detailed log of all photos taken with the camera. Circle "Y" (yes) or "N" (no) as an indication of whether voucher specimens were collected at a site. If "Y" is circled, the collection tag number(s) should be written in the Specimen #s field. In New Mexico, all specimens collected should be given to the New Mexico Dept. of Game and Fish, Endangered Species Program for identification and deposition in the Museum of SW Biology at Univ. of New Mexico. Vouchers collected in Arizona should be provided to Arizona Game and Fish Department, Nongame Branch, Phoenix.

***H₂OCLASS:** Circle 1 category that best describes the hydrological class of the water system you have surveyed.

Lentic = still water
Lotic = flowing water

***H₂OTYPE:** Circle 1 category that best describes the type of water you have surveyed. The categories are based upon lotic/lentic characteristics as well as the size/magnitude of the water body:

Riverine = natural flow, from raging rivers to streams to seeps
Wetland = an inland body of water that is primarily emergent vegetation (e.g., cienega)
Stock tank = an earthen-dammed or dredged basin that catches run-off for livestock or wildlife
Lake = an inland body of water that is primarily open water
Reservoir = a dammed riverine system that is primarily used for recreation and/or human water supply
Metal/concrete tanks and drinkers = manmade water holding structures
Canal = manmade (metal, concrete or earthen) diversion or drainage ditch.
Plant outflow = sewage and electric plants; any chemical or mechanical processing of water; storm drainages
Dry Tank = a stock tank that is dry

***SEARCH METHODS:** Circle all methods used to search for herps. If needed, include a description of other techniques used to search in the SITE / SURVEY NOTES with a footnote reference. Remember, during the course of any survey, the surveyor should dip net, comb through bushes and grasses, turn over rocks, and scan the water and shore for herpetofauna.

pH: Measure pH using a pH meter. The water sample should be taken from water column 1 meter from shore. For bodies of water less than 2 meters wide, take the sample from the center. Be sure to: 1) take the cap off the meter before using, 2) keep the level of the water sample below the mark on the meter, 3) turn the meter on before measuring the pH of the sample, and 4) turn the meter off when finished sampling. Meters should be calibrated monthly.

TDS/
CONDUCTIVITY Total Dissolved Solids should be measured using a TDS meter, following instructions for pH.

*T_{AIR}: Measure air temperature to the nearest 10th of a degree (degrees Celsius) 1.5 meters above ground and 1.5 meters from the water. Be sure thermometer is shaded and completely dry.

*T_{WATER}: Measure water temperature to the nearest degree (degrees Celsius) 1 centimeter below water's surface and 1 meter from shore. For bodies of water less than 2 meters wide, measure temperature at the center. Be sure to shade the thermometer.

WATER CLARITY: Circle 1 clarity category that best describes the survey area.

*LENTIC LENGTH: For lentic systems, record the length (i.e., longest axis) of the system in meters. Measure the entire system (not just the portion surveyed), and use the standing water at the time of the survey as your boundaries. Do not measure the normal waterline or highwater mark. For large systems, estimate the length using a map. Do not rely on a visual estimate for large systems.

*LENTIC WIDTH: For lentic systems, record the width (i.e., shortest axis) of the system in meters. The width should be the maximum distance perpendicular to the length axis. As with the length, the width should reference the entire lentic system, not just the portion surveyed, and should be determined based upon the standing water present at the time of the survey, not the usual waterline or high water mark. Use a map as a guide for larger systems.

*LOTIC WIDTH: For lotic systems, select one range that best describes the width of water at the time of the survey. Do not measure the normal waterline or the high water mark. When the width category is in doubt, round up.

*RIPARIAN
WIDTH: Record the maximum width of the riparian area in meters. Riparian width should be measured from the boundary of riparian vegetation and upland vegetation. For a lentic system, include the area of riparian vegetation along the shore of the body of water and any vegetated waters. For a small lotic system in which both banks can be surveyed simultaneously, include the zone of riparian vegetation on both banks of the body of water surveyed and any vegetated waters. For large or swiftly flowing lotic systems, include only bank that was surveyed or the mean width of riparian vegetation on both banks. Riparian width is measured for the area surveyed.

***PRIMARY SUBSTRATE:** Circle from 1 to 3 categories as appropriate. All substrate types may be present, but choose only those that best describe the area potentially inhabited by target species.

Mud/Silt = 0.001-0.1 mm
 Sand = 0.1-2 mm
 Gravel = 2-32 mm
 Cobble = 32-256 mm
 Boulder >256 mm
 Bedrock = exposed sheet of rock

***WIND:** Circle 1 category as appropriate. Wind should be measured 1.5 meters above the ground and 1.5 meters from the water. If using a wind meter, be sure to: 1) hold meter near the top so that you are not blocking any holes, 2) face into the direction of the wind while reading the meter, and 3) use the left scale for wind strengths < 10 mph, and use the right scale (by putting your index finger over the red knob on top of the meter) for wind strengths ≥ 10 mph. Wind speed can be estimated with the Beaufort scale:

≤ 1 mph = smoke rises vertically
 1-3 mph = wind direction shown by smoke drift
 4-7 mph = wind felt on face, leaves rustle
 8-12 mph = leaves and small twigs in constant motion, wind extends light flag
 13-18 mph = raises dust and loose paper, small branches are moved
 19-24 mph = small trees begin to sway, crested wavelets form on inland waters
 >24 mph = greater effect than above

***PRECIPITATION:** Circle 1 category as appropriate.

***CLOUD COVER:** Circle 1 category as appropriate. Categories are based on percent cover.

VEGETATION % & PROMINENT SPECIES: Record the percent of the area potentially inhabited by target species that is covered by floating vegetation (e.g., broad-leafed macrophytes and dense algal mats), submerged vegetation, emergent vegetation (e.g., cattails, sedges, rushes), perimeter vegetation (i.e., up to 1 m from waters edge), and canopy vegetation. Use increments of 5% (i.e., 1% effectively = 0). Record the genus name or common name (only if positively identified) of the 1-4 most prominent species that best describe the surveyed area.

***PREDATORS:** Circle all predators seen or otherwise detected at a survey site. Most predator categories lump together similar organisms and/or organisms with similar effects on riparian herps. Record herp predators in the Herpetofauna Observations table. For **crayfish**, include claws and carapaces as evidence of presence. For **dragonflies**, do not include damselflies. For **beetles**, include any large aquatic beetles observed, such as hydrophilids and dytiscids. **Warm water fish** include bass, carp, catfish, perch, sunfish, and walleye. **Cold water fish** include trout and pike. **Large wading birds** include American bittern, black-crowned night heron, egrets, great blue heron, and green-backed night heron. **Mammals** include only medium-sized mammals such as skunk, ring-tail, and raccoon.

***OTHER** This field is to be used for observations of species other than riparian herpetofauna.

- ORGANISMS:** Riparian herps are to be recorded in the "Herpetofauna Observations" table. List all non-riparian herps by 4-letter genus/species code or write out common or scientific name. List Federal or State sensitive species of other organismal groups or any other species whose occurrence merits noting by common name. No words other than the species name(s) should be listed (e.g., great horned owl, elk). Use the OTHER ORG. NOTES field as needed to expand upon why you listed a species.
- OTHER ORG. NOTES:** Use this field to write out noteworthy observations about any or all of the species listed in OTHER ORGANISMS (e.g., great horned owl roost site observed, area heavily impacted by elk grazing).
- SITE / SURVEY NOTES:** Use this field to describe the most outstanding features of a survey or site. **Don't be redundant** with fields already completed. Write short, specific comments that emphasize habitat quality and why you think you did or did not find herps. Be sure to comment on any land use in, around, or in proximity of the survey area that may potentially impact the study site (e.g., large mining operation 0.5 mile upstream of survey site, agricultural spraying 1 mile from survey site). You can also use this field to describe any noteworthy similarities or dissimilarities between the area searched and the total area (e.g., wash devoid of vegetation except in area of survey, survey covered the north end of the lake which was the only area with emergent vegetation).

Herpetofauna Observations:

- *SPECIES:** Record all riparian herp species (target or non-target) detected during a survey in this column. Record non-riparian herpetofauna in the OTHER ORGANISMS and OTHER ORG. NOTES. If no species are observed, record "NONE." Use the unique 4-letter Genus-species code or write out common or scientific name. for all riparian herp species. When an organism cannot be identified to species (e.g., "I saw a ranid-like frog", or "I saw an anuran egg mass"), use the 4-letter code corresponding to the taxonomic classification for which you are confident in your identification. For the examples above, the ranid-like frog would be assigned the code "RANA", and the egg mass would be coded as "ANUR". If you are confident you saw a leopard frog but are not certain which species you saw, use the code "RAPC." **Do not use historic information to bias your decision on species identification.** Record your most confident observation and justify it in the NOTES or COMMENTS.
- CERTAINTY:** Circle 1 word to indicate your level of certainty about your identification of each species. Certainty of identification should be based on species-specific diagnostic characters (e.g., thigh pattern and dorsolateral folds in leopard frogs, scale row of lateral stripes in garter snakes, lack of dorsal stripe and cranial crests in New Mexico toads). For information on diagnostic characters of species, see the references listed in the survey protocol.
- LIFE STAGE:** Circle the life stage of each species observed. Use separate rows for different life stages of the same species. A juvenile leopard frog is usually < 55 mm SVL, while an adult is > 55 mm SVL or exhibits obvious sign of breeding condition (e.g., swollen thumbpads, stretched vocal sacs)
- # OBSERVED:** Enter the number of individuals of each species and life stage you encountered. Do not estimate total numbers within the survey area, but record only the number that you saw. For egg masses, estimate the number of eggs, note the overall size of mass,

condition, and stage of embryos in the NOTES or COMMENTS sections (see Gosner 1960).

- NOTES:** Record any relevant notes specific to the species or life stage observed. Types of observations to include are as follows: 1) what criteria were used to identify a species; 2) if species identification is uncertain, what was observed including both physical features and behaviors would be of use (e.g., “dorsal spots obs.,” “ranid like plop,” “no bullfrog peep”); 3) record the collection number (field tag #) of any voucher specimens taken; 4) record any photo vouchers taken; and 5) note the presence of disease or deformities.
- COMMENTS:** Use this field to elaborate upon species. Be sure to reference your comments with the species observation to which it relates by using numbers or letters (i.e., a footnote).

Appendix D, Attachment 4 Code of Practice

Prepared by the Declining Amphibian Populations Task Force (DAPTF) to provide guidelines for use by anyone conducting fieldwork at amphibian breeding sites or in other aquatic habitats.

Observations of diseased and parasite-infected amphibians are now being frequently reported from sites all over the world. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up in apparent infections of novel disease agents, may cause an increased risk of mortality in wild populations.

Amphibian pathogens and parasites can also be carried in a variety of ways between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to novel localities containing species which have had little or no prior contact with such pathogens or parasites. Such occurrences may be implicated in some instances where amphibian populations have declined. Therefore, it is vitally important for those involved in amphibian research (and other types of wetland/pond studies including those on fish, invertebrates, and plants) to take steps to minimize the spread of disease agents and parasites between study sites.

The DAPTF Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tyres, and all other surfaces. Rinse cleaned items with sterilized (eg. boiled or treated) water before leaving each study site.
2. Boots, nets, traps etc. should then be scrubbed with 70% ethanol² solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.
3. In remote locations, clean all equipment as described above (or with a bleach solution) upon return to the lab or "base camp". Elsewhere, when washing-machine facilities are available, remove nets from poles and wash with bleach on a "delicates" cycle, contained in a protective mesh laundry bag.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps and other equipment to each site being visited. Clean and store them separately at the end of each field day.
5. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact between them (e.g. via handling, reuse of containers) or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly- screened for the presence of any potential disease agents.
7. Used cleaning materials (liquids etc.) should be disposed of safely and if necessary taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

² One % quaternary ammonia and 10% bleach solutions can also be used. These solutions as well as 70% ethanol are very effective at killing chytrids (Johnson et al. 2003. *Diseases of Aquatic Organisms* 57:255-260).

The DAPTF Fieldwork Code of Practice has been produced by the DAPTF with valuable assistance from Begofia Arano, Andrew Cunningham, Tom Langton, Jamie Reaser and Stan Sessions.

For further information on this Code, or on the DAPTF, contact: John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK. E-mail: DAPTF@open.ac.uk Fax: +44 (0) 1908-654167

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