



# United States Department of the Interior



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In Reply Refer To:  
AESO/SE  
22410-2002-F-0162-R001

February 21, 2012

Email Transmission  
Memorandum

To: Field Manager, Tucson Field Office, Bureau of Land Management, Tucson, Arizona

From: Field Supervisor

Subject: Reinitiation of Biological Opinion on the Las Cienegas National Conservation Area  
Resource Management Plan (22410-2002-F-0162) in Pima and Santa Cruz Counties,  
Arizona

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated September 23, 2011, and received by us on September 29, 2011. At issue are impacts that may result from continuing and future Bureau of Land Management (BLM) management actions at the Las Cienegas National Conservation Area (NCA), Pima and Santa Cruz counties, Arizona. You determined that the proposed action may adversely affect populations of the threatened Chiricahua leopard frog (*Lithobates chiricahuensis*), endangered Gila chub (*Gila intermedia*), endangered Gila topminnow (*Poeciliopsis occidentalis*), endangered desert pupfish (*Cyprinodon macularius*), and endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*).

You also determined that the proposed action is not likely to adversely affect the endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*). Your September 23, 2011, letter also requested a conference on your determination that the proposed action is not likely to destroy or adversely modify proposed critical habitat for the Chiricahua leopard frog. We concur with your determinations and provide our rationale in the Appendix A. This biological and conference opinion (BCO) is a reinitiation of the consultation for Las Cienegas NCA Resource Management Plan (File number 2-21-02-F-162, now 22410-2002-F-0162).

This BCO is based on information provided in your September 2011 Biological Evaluation (BE), the 2002 BCO on Las Cienegas NCA Resource Management Plan, the 2008 BO on Aquatic Species Conservation at the San Pedro Riparian and Las Cienegas National Conservation Areas, Arizona (File number 22410-2008-F-0103), other sources of information, and literature cited. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern or on

other subjects considered in this BCO. A complete administrative record of this consultation is on file at this office.

All actions associated with moving, stocking, and extracting listed aquatic animals species that are part of the proposed action will be implemented by the Arizona Game and Fish Department (AGFD). Effects of these actions have been analyzed as part of the section 10(a)(1)(A) research and recovery permit held by AGFD (TE-821577), and will not be included in this analysis. Also, the effects of all actions associated with surveying or monitoring listed species, including plants, have been analyzed as part of the section 10(a)(1)(A) research and recovery permit held by your office (TE0828830-0), and will not be included in this analysis.

Herein, we revise specific sections of biological and conference opinion 22410-2002-F-0162 (dated October 4, 2002) on the Las Cienegas NCA Resource Management Plan. Sections not addressed or revised herein remain as presented in the 2002 opinion.

### **CONSULTATION HISTORY**

September 8, 2011 – We received a draft description of the proposed action regarding stock pond restoration for listed species (BLM-AZ-G020-0028-EA) and began informal consultation.

September 8-9, 2011 – We provided comments and discussed the proposed action with Jeff Simms of your office.

September 19, 2011 – We received an electronic copy of a draft biological evaluation for the proposed modification and use of livestock watering facilities for and stocking of Gila topminnow, desert pupfish, and Chiricahua leopard frog on Las Cienegas National Conservation Area, Santa Cruz and Pima counties, Arizona, from Jeff Simms of your office.

September 20, 2011 – We received an e-mail with a minor change to the proposed action from Jeff Simms of your office.

September 29, 2011 – We received the final biological evaluation and request to initiate formal consultation on the proposed action.

October 2, 2011 – We received an e-mail with a clarification of a no-effect determination for critical habitat for the Gila chub from Jeff Simms of your office.

### **BIOLOGICAL OPINION**

The following proposed management action supports the Fish and Wildlife Management Land Use Allocation and corresponding Fish and Wildlife Objective identified in the Las Cienegas RMP.

### **DESCRIPTION OF THE PROPOSED ACTION**

The BLM Tucson Field Office proposes to modify and manage livestock watering sites (earthen ponds and large modified above-ground storage tanks) on Las Cienegas NCA so that they can support self-sustaining populations of the endangered Chiricahua leopard frog that will aid in the recovery of this species and its biologically imperiled predator, the northern Mexican gartersnake (*Thamnophis eques megalops*), currently a candidate species under the Act. A maximum of 16 livestock watering sites at any

one time will be managed as perennial habitat for native aquatic species on Las Cienegas NCA. The BLM, in coordination with the USFWS and AGFD, will provide for the translocation and establishment of Chiricahua leopard frogs and northern Mexican gartersnakes, as well as Gila topminnow, desert pupfish, Gila chub, Sonora mud turtle, and Huachuca water umbel at these livestock watering tank sites. All of these species, with the exception of the Sonoran mud turtle, have some listing status under the Act. This action is part of the Fish and Wildlife Management Land Use Allocation of the Las Cienegas NCA Resource Management Plan [File No. 6840(069)].

This action is a departure from the management of earthen ponds described in the Las Cienegas RMP. Currently, all earthen ponds (a.k.a. repressos) are managed as ephemeral waters for use only when required to water cattle, and then drained if they do not dry annually. These measures were implemented to protect populations of Gila topminnow from both grazing impacts and establishment of invasive exotic species such as the American bullfrog (*Lithobates catesbeiana*) (see consultation number 22410-2002-F-0162).

Prior to any release of aquatic species into livestock watering tanks under this proposed action, BLM will assess potential release sites for habitat suitability as well as potential for conflicts with neighboring properties. Initial sites that will be assessed for project implementation are within the Empire-Cienega Allotment and the Appleton-Whittell Area of Critical Environmental Concern (ACEC) and are listed as follows (see also figures 1 and 2):

Antelope Tank	Hummel Tank
Apache Cabin Tank	Irrigation Well Tank
Bald Hill Tank	Johnson Tank
Bill's Tank	Karen's Tank
Cinco Tank	Lower Springwater Windmill Tank
Cinco Windmill Tank	Maternity Tank
Clyne Pond	New Well Tank
Cottonwood Windmill Tank	Oil Well Tank
Empire Well Tank	Orchard Tank
Enzenberg North	Upper Cienega Ranch Tank
Frog Tank	Upper Road Canyon Tank
Gaicho Well & Gravel Pit tanks	

### Species Translocations

In addition to Chiricahua leopard frog and northern Mexican gartersnake, target native aquatic species that may be established at these sites over the next ten years also include Huachuca water umbel, Gila topminnow, Gila chub, desert pupfish, and Sonora mud turtle (*Kinosternon sonoriense*). No plants or animals will be moved or released into stock ponds until stock ponds are excavated and sufficient time has passed (approx. one month) for water quality to stabilize and aquatic ecosystem functions related to the food web have progressed sufficiently. Species mix for each habitat, exact quantity and timing of the releases will be determined by the USFWS and AGFD, in consultation with BLM. Initial releases will primarily be Chiricahua leopard frogs and potentially native fish. Release of northern Mexican gartersnakes and/or mud turtles will follow the establishment of robust populations of leopard frogs and/or native fish, which are prey for gartersnakes.

Fish and frogs (eggs/tadpoles/recent metamorphs/adults) used for releases will come from appropriate sources as determined by the USFWS in cooperation with the AGFD with guidance from recovery plans and the latest biogeographic and genetic information. The AGFD and USFWS will determine appropriate numbers of Sonoran mud turtles and northern Mexican gartersnakes for initial release at sites at a future date. Source populations of northern Mexican gartersnakes will be determined at a future time because this species does not currently have a captive or robust wild source population. Mud turtles will only be released into stock ponds from sources in Cienega and O'Donnell creeks. Additional fish, Chiricahua leopard frogs, mud turtles, or gartersnakes will be added to each location to create genetically diverse, founding populations of the each species. The AGFD, USFWS, and other properly permitted individuals will collect and move native fish and frogs (eggs, tadpoles, recent metamorphs or adults). The AGFD and properly permitted individuals in coordination with BLM will collect and move Mexican gartersnakes. The BLM will monitor habitat and jointly monitor populations with the USFWS and AGFD.

In addition, Huachuca water umbel will also be transplanted to suitable pond locations in coordination with the USFWS Arizona Ecological Service Office (AZESO) botanist. Water umbel plants are typically transplanted as "plugs" grown under controlled conditions specifically for moving to new sites. The suitability of habitats for Huachuca water umbel will be assessed by a qualified botanist in coordination with the USFWS AZESO botanist. Plant stock used for the translocations will be chosen by the USFWS AZESO botanist. The exact quantity and timing of transplants will be dictated by the number of plugs available and days remaining in the growing season at the time of transplant (e.g., 10 to 20 plugs). The USFWS or properly permitted individuals will work in coordination with BLM will collect and move this endangered plant. Additional plugs will be added to each site, as needed, to maintain a healthy, self-sustaining population over a 10 year period.

Sites with native aquatic species will be monitored on a semi-annual basis. Exotic invasive species such as crayfish, bullfrogs, and a variety of sport and bait fishes may invade these establishment sites from adjacent waters. If detected, animals will be captured and removed from the site in an expedient manner to prevent their establishment at other sites. Methods of removing invasive aquatic animal species include setting hoop nets, seining, electrofishing, drying ponds or other physical methods as determined in coordination with USFWS and AGFD. Exotic and/or invasive wetland plant species such as bulrush (*Scripus* sp.) and cattail (*Typha* sp.) may also invade establishment sites. If detected during monitoring, they may be removed by hand to limit their establishment. No chemical removal methods will be employed under this action.

Following the initial establishment of individual populations of each species at a site, it may be necessary to augment species numbers when populations are reduced due to flood, drought, habitat maintenance, disease, or for maintenance of genetic diversity. In the event that there is population failure at any site during the 10 year establishment period, the BLM, USFWS, and AGFD will determine if the site is suitable for continued recovery efforts or if additional modifications to the site are needed. Sites that are found no longer to be suitable will not continue to be augmented or managed for that particular species.

#### Stock tank site modification and maintenance

Livestock watering sites on Las Cienegas NCA are generally open dirt ponds excavated to a depth of three feet and between 20 and 100 feet (ft) in diameter. At sites where water is supplied by pumping water from a well, ponds currently hold water seasonally for 1 to 3 months during the time that livestock use a pasture. Other sites have stock ponds that collect precipitation runoff and hold water for several months out of the year. Only two sites, Oil Well Tank and Clyne Ponds, are greater than six feet deep and typically have water year around.

Livestock watering sites on Las Cienegas NCA that are currently managed as seasonal waters for livestock will be modified in one of the following ways so that they may serve as perennial habitat for native aquatic species:

1. BLM will construct a fence around the entire earthen pond to exclude livestock. Prior to fencing an earthen pond, BLM will install metal or plastic drinking troughs for livestock outside the area to be fenced. The BLM will determine the number of drinkers needed to meet its goal of improving livestock health and growth rates in accordance with the LRMP.
2. BLM will construct a second earthen pond to create “twin” ponds with one pond serving as an ungrazed refuge for native aquatic species, and the other pond serving as a watering point for livestock that is also accessible to the native aquatic species in the ungrazed pond. New ponds will be excavated to a maximum depth of six feet with pond surface area generally not to exceed 2,700 ft<sup>2</sup> (~50 feet in diameter).
3. At sites with earthen ponds >100 ft. in diameter, BLM will fence a portion of the pond to exclude cattle from at least one-third of the pond area to provide a refuge for native aquatic species until drinking troughs are installed. Once troughs are in place, the entire pond will be fenced to exclude livestock.
4. At sites with cement storage tanks that no longer supply water for earthen ponds, the BLM may cut away 30-50% of the tank perimeter and maintain a pond depth of 1.5-2 feet for aquatic species use.

A solar-powered pump will serve water from an existing well to each livestock watering site managed for native aquatic species via a buried water pipe, and a storage tank if needed. The BLM will install a solar panel stand with frame, wire the solar panels to the well, or bury a water pipe for water conveyance at sites that do not currently have these facilities. New and existing earthen ponds may be sealed with bentonite clay or a rubberized coating to prevent seepage losses. Fencing around or through a pond will be either a) installation of a 42-inch tall fence of welded three-rail steel pipe with T-posts at 8-foot intervals, or b) reinforcement of an existing barb-wire fence around the perimeter of the pond with extra t-posts, additional wire, or stronger materials to prevent livestock access. Gates will be installed on the pipe fences to facilitate the removal of livestock that inadvertently gain access to an enclosure.

Habitat enhancements at a site will include placing rocks and logs along the banks of ponds to provide sunning locations for Chiricahua leopard frogs and mud turtles. On an opportunistic basis, native cottonwood (*Populus* sp.) logs from the abandoned agricultural fields along Cienega Creek or native mesquite (*Prosopis* sp.) logs from upland habitat restoration projects will also be placed in ponds to provide structural habitat for both native fish and frogs. In addition, plugs of wetland plants such as spike rush (*Eleocharis* sp.), wire rush (*Juncus articus* var. *balticus*) and knot grass (*Paspalum distichum*) will be planted initially to preclude establishment of less desirable plant species. Other plant species will likely colonize the ponds from windblown seeds and shore bird droppings. If invasive and/or exotic wetland plant species are detected, they may be removed by hand to limit their establishment.

Dredging of ponds may be necessary on an infrequent basis (5-10 years). Native fish, frogs, turtles, and snakes will be salvaged from a pond scheduled for dredging and held temporarily while dredging is taking place. A portable above ground pool and circulating pump or other holding facility will be utilized at

sites with a single water source (i.e., modified cement storage tank or single earthen pond). At locations with twin ponds, animals will be moved to the adjacent pond while dredging is taking place. Dredge material will be placed around the corresponding dredged pond perimeter in accordance with current practice. Animals will be released back into habitat shortly after verifying that the pond will hold water and water quality is adequate (generally 2-5 days).

### Livestock Management

Twenty-one of the twenty-three sites included in the proposed action are within the Empire-Cienega grazing allotment; the other two, Antelope and Bald Hill tanks, are within the Appleton-Whittell Area ACEC. Livestock use at all ponds that can be accessed by cattle is currently uncontrolled while livestock are in the surrounding pasture. Duration of grazing in any one pasture on Las Ciengas NCA is from four to eight weeks, but may last as long as twelve weeks. Herd size can vary from 600 to 1000 head in any pasture. Following use of the ponds by livestock, an area several hundred yards in diameter is often denuded by trampling and grazing. Large amounts of droppings generally cover pond banks and the general area. The proposed action will control livestock use at ponds as described in the previous section to protect sufficient aquatic habitat such that aquatic species can thrive, while managing livestock access to increase effectiveness of pasture rotations and to manage vegetation.

### Recreation

The proposed action is in a popular national conservation area with seasonally high levels of recreation visitation. The Las Cienegas NCA is readily accessible, as it is within an hour's drive from two major metropolitan areas, Sierra Vista and Tucson. Recreation use continues to increase. Popular activities include hunting, off highway driving, bird watching, camping, picnicking, and sightseeing. Recreation use is largely "dispersed" and occurs year round, but because of climatic conditions and visitors' preferences, use is higher during the cool weather months of fall and spring. Some of the sites included in the proposed action are remote, while other sites have easy access for recreation from well-traveled roads (i.e., Cottonwood Windmill Tank, Maternity Well, Road Canyon, and Cienega Ranch Tank).

### **Conservation Measures**

As part of the proposed establishment of these native species assemblages and ongoing actions, BLM has committed to implementing certain measures devised to reduce effects of the proposed actions on Huachuca water umbel, Gila chub, desert pupfish, Gila topminnow, and Chiricahua leopard frog. BLM will:

- Mow fine fuels, such as grass, with a tractor to a width of eight feet around the perimeter of each pond to be fenced to limit fire starts from welding and assist layout of fence lines.
- When fire danger reaches "High", cease welding in the project area if the site has a fire risk.
- Require the following items to be on hand at all times while working in the project area: shovel, 10 pound fire extinguisher (Class ABC is sufficient) or 20 gallon backpack water sprayer, and a five gallon bucket of sand, dirt or water.
- Use only well maintained leak-free equipment for pond modification and maintenance. Refuel and repair equipment away from the project sites.
- Follow standard operating procedures for working in leopard frog habitat including disinfecting all field equipment to prevent the spread of amphibian chytrid, *Batrachochytrium dendrobatidis* (Bd).
- Select plants and logs from sources unlikely to be contaminated with Bd, or decontaminate plants and logs prior to use in stock pond habitats.

- Coordinate with USFWS all plantings of wetland plants to prevent the establishment of species incompatible with water umbel.
- Monitor habitat for the presence of bullfrogs and other non-native species twice a year. Work with USFWS and AGFD to address any incursions of American bullfrogs into the ponds in the spring and summer by mechanical removal. If bullfrog tadpoles are discovered, salvage native and listed aquatic species in the contaminated pond, and then dry the pond if necessary by eliminating inflow from the well source or pumping the pond dry. Release fish and frogs back into habitat shortly after bullfrogs and tadpoles have been eliminated (typically 2-5 days).
- At each location where aquatic species are stocked, install a sign that communicates the presence of federally listed species, the importance of conservation and stewardship, and a notice that the Las Cienegas NCA is closed to fishing by commission order and that listed species in the ponds are protected by federal law. At sites that have Huachuca water umbel, include an additional message to warn the public of risk to endangered plants from trampling.
- At Cottonwood Windmill Tank and other sites with good public access such as Maternity Well, Road Canyon, and Cienega Ranch Tank, install a sign panel describing the aquatic ecosystem and conservation value of the stock pond and aquatic species habitat concept.
- Locate new pond construction outside of proposed or designated critical habitat.
- Remove trespass livestock shortly after detection in areas with exclosures.
- Monitor and maintain fences around ponds.
- Regularly monitor water supply conditions at each occupied site to ensure aquatic habitat quality and persistence.
- Salvage native fish, frogs, turtles, and snakes from a pond scheduled for dredging and temporarily hold animals while dredging is taking place.
- Coordinate with USFWS to determine if salvage of Huachuca water umbel from a pond scheduled for dredging is needed.
- Work with USFWS and AGFD to develop a plan to monitor aquatic animal species and habitat to identify factors related to the success and failure of the newly established population(s). The monitoring plan will include a decision framework to carry out the following actions during the ten year project period:
  - augment numbers and genetic diversity through additional stockings
  - remove Gila chub in ponds where Chiricahua leopard frog populations appear to be declining due to mortality of tadpoles
  - re-establish populations in the case of a catastrophic event such as disease outbreak, flood, fire, water quality contamination or other unforeseen circumstances.

## **STATUS OF THE SPECIES**

### **Chiricahua Leopard Frog**

The range-wide status of the Chiricahua leopard frog and along with proposed critical habitat were recently described in our proposed rule to list and designate critical habitat for the species published in the Federal Register on March 15, 2011 and subsequently updated on September 21, 2011 (76 FR 14126 and 76 FR 58441, respectively). This information is incorporated herein by reference.

### **Gila Chub, Gila Topminnow, and Desert Pupfish**

The range-wide status of Gila chub, Gila topminnow, and desert pupfish were recently described in our June 6, 2011 BO that reinitiated formal consultation for native fish management actions in the Sands Draw Wildlife Exlosure managed by the Bureau of Land Management (BLM) (File Number 22410-2011-F-0138). This information is incorporated herein by reference.

### **Huachuca Water Umbel**

The range-wide status of the Huachuca water umbel has changed little since our January 14, 2009 BO that addressed the Peterson Ranch Pond Maintenance Project in the Huachuca Mountains, Cochise County, Arizona (File Number 22410-2009-F-0108). This information is incorporated herein by reference.

## **ENVIRONMENTAL BASELINE**

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

### **Description of the action area**

The action area for this consultation includes Las Cienegas NCA, as well as areas upstream and downstream of the NCA where native fish and frogs could disperse. For native fish, potential dispersal areas are limited to the lotic system of Cienega Creek which moves through Las Cienegas NCA and includes the main tributaries in Empire Gulch and Mattie Canyon. Potential dispersal areas beyond Las Cienegas NCA for Chiricahua leopard frogs are within 5 miles along the perennial lotic system described above that could be occupied by frogs, within 3 miles of drainages with intermittent flow that are adjacent to a site potentially occupied by frogs, or overland areas within 1 mile of a site potentially occupied by frogs (i.e., stock ponds).

Las Cienegas NCA was created by Congress to “conserve, protect, and enhance” biological and other natural resources. The BLM manages Las Cienegas NCA with restrictions on multiple use activities that would impair ecological processes on watershed and riparian areas, as described in the current resource management plan [File No. 6840(069)].

Cienega Creek is subject to a number of human uses, including livestock grazing, recreation, urban and suburban development, groundwater pumping, and roads. Before BLM acquired the Las Cienegas NCA, the area was primarily used for grazing, and there were extensive agricultural fields along the creek as well (Eddy and Cooley 1983). These fields were irrigated by a system of canals and dams that the BLM is currently removing to restore more natural geomorphic and hydrological conditions conducive to native fish habitat (USFWS 1998, Simms 2001). The NCA presently receives heavy human visitation, and most of Cienega Creek is readily accessible. Upstream of the NCA, the Cienega Creek watershed is primarily used for livestock grazing. However, there is extensive proliferation of ranchette development in the area surrounding the town of Sonoita. Several wineries and vineyards occur along the groundwater divide

between Cienega Creek and Babocomari River basins. The vineyards are entirely supported by groundwater.

The environmental baseline of the Las Cienegas NCA is thoroughly discussed in the USFWS 2002 Las Cienegas NCA Resource Management Plan BCO (File number 22410-2002-F-0162), and is incorporated herein by reference.

## **Chiricahua Leopard Frog**

### *A. Status of the species within the action area*

Chiricahua leopard frogs have likely increased in number and locations on Las Cienegas since the 2002 BCO and 2008 BO were completed. Little was known of the status of the frog in the action area when the 2002 BCO was completed. In 2007, in-situ headstarting ponds were created and subsequently colonized by Chiricahua leopard frogs (USFWS 2007). Frogs were observed in 2008 at Cinco Ponds, where they had not been seen for years (USFWS 2008). Chiricahua leopard frogs are currently extant at Empire Gulch near Empire Spring and Cinco Ponds in the action area. A few adult Chiricahua leopard frogs have also been observed in the earthen pond at Maternity Well (Hall 2011). Frogs breed in reaches of Empire Gulch and Cienega Creek near Empire Ranch, and may also breed at Cinco Ponds. The in-situ ponds along Empire Gulch are now enclosed with wire-mesh fencing and used to headstart eggs and tadpoles of Chiricahua leopard frogs for release to augment the wild population. In addition, portions of two egg masses were collected from Cienega Creek in June 2011 and taken to the Phoenix Zoo by USFWS to headstart the wild population. On October 3, 2011 Arizona Game and Fish Department released tadpoles and metamorphs from the Phoenix Zoo at the following sites on Las Cienegas NCA: 186 tadpoles and 56 metamorphs to Cinco Ponds, 200 tadpoles to steel rim tank at Maternity Well, and 100 tadpoles to northern enclosure of the ranarium at Empire Gulch. Once these tadpoles at Maternity Well and the ranarium have metamorphosed, they may be moved to other sites addressed in this current proposed action (Hall 2011).

### *B. Factors affecting the species' environment within the action area*

Bullfrogs continue to be a threat to the Chiricahua leopard frog in the action area, and were extant along Cienega Creek on Las Cienegas NCA in 2011 (Hall 2011). Bullfrogs have not been detected at other sites on Las Cienegas NCA where Chiricahua leopard frogs and Lowland leopard frogs (*Lithobates yavapiensis*) are extant (Hall 2011). Chiricahua leopard frogs extant on Las Cienegas NCA also suffer from chytridiomycosis caused by Bd which has resulted in periodic die-offs; however, Chiricahua leopard frogs are persisting on the Las Cienegas NCA with the disease.

Proposed critical habitat for the species includes an approximate 4.33-mile reach of Empire Gulch and a 1.91-mile reach of Cienega Creek, including Cinco Ponds. Proposed critical habitat for the Chiricahua leopard frog overlaps with designated critical habitat for the Gila chub in portions of Empire Gulch and Cienega Creek.

## **Gila Chub, Gila Topminnow, and Desert Pupfish**

### *A. Status of the species within the action area*

The action-area status of the desert pupfish, Gila chub, and Gila topminnow were recently described in our December 31, 2008 BO that addressed effects of Aquatic Species Conservation at the San Pedro Riparian and Las Cienegas National Conservation Areas, Arizona (File number 22410-2008-F-0103). This information is updated here.

Native fish species in Cienega Creek on Las Cienegas NCA include Gila topminnow, longfin dace (*Agosia chrysogaster*), and Gila chub (Bagley et al 1991, Simms and Simms 1992). Cienega Creek is one of the last places in Arizona supporting an intact native fish fauna including assemblage uncontaminated by nonindigenous fish. Few, if any, other nonindigenous fish taxa are currently found in Cienega Creek. However, with increasing access and recreational use, the vulnerability of the stream and its native fish populations to nonindigenous species invasion is intensifying. The Cienega Creek basin has been closed to fishing by the Arizona Game and Fish Commission to reduce the potential for release of illegal fish and live bait. In addition, regional drought has impacted stream flows in both Empire Gulch and Cienega Creek, and resulted in a decrease in the amount of perennial aquatic habitat (Bodner *et al.* 2007, Bodner and Simms 2008).

The status of Gila chub in the action area continues to be stable since the 2008 BO was completed. Cienega Creek on the Las Cienegas NCA has the only known stable-secure population of Gila chub in existence. The Gila chub is found throughout Cienega Creek and Mattie Canyon on Las Cienegas NCA, but is absent from Empire Gulch. Cienega Creek also has a second, small population of Gila chub north of Interstate 10 and Las Cienegas NCA on Pima County's Cienega Creek Preserve. Extensive surveys in 2009 and 2011 suggest that Gila chub continue to be abundant in Cienega Creek (Doug Duncan, USFWS, Pers. Comm). Surveys in 2007 demonstrated that Gila chub are recolonizing Mattie Canyon following heavy flooding and extreme sedimentation resulting from collapse of a grade control structure in 2001. No chub have ever been observed in Empire Gulch since BLM acquired Las Cienegas NCA in 1988. All three creeks on the Las Cienegas NCA have designated critical habitat for the species. Primary constituent elements one and three of critical habitat (perennial pools, areas of higher velocity between pools, and areas of shallow water; and water quality with reduced levels of contaminants, and adequate levels of pH, dissolved oxygen, and conductivity) have been negatively impacted by drought in the area.

The natural population of Gila topminnow in Las Cienegas continues to be one of only two on public lands and it is the largest of all remaining natural populations in the United States (Simms and Simms 1992). This topminnow population is also one of only three natural Gila topminnow populations not contaminated by mosquitofish (Weedman 1999, Voeltz and Bettaso 2003). The first repatriation of Gila topminnow into the Cienega Creek drainage at Empire Gulch took place in October 2001, followed by with additional releases in later years. However, reestablishment of Gila topminnow at Empire Gulch has failed (Doug Duncan, USFWS, Pers. Comm.). This is likely due to high levels of aquatic vegetation and aquatic invertebrate predators of Gila topminnow in Empire Gulch (Bodner *et al.* 2007). BLM management actions that have improved riparian and aquatic habitat for other species on Cienega Creek, coupled with drought, have caused topminnow to become significantly rarer in the upper perennial reach. The lower reach appears to have a stable Gila topminnow population (Doug Duncan, USFWS, pers. Comm.).

The status of desert pupfish remains the same since the 2008 BO was completed. No natural populations of desert pupfish remain in Arizona, although several wild, reestablished populations exist in southern Arizona outside of the action area. No designated critical habitat occurs in or near the project area.

*B. Factors affecting the species' environment within the action area*

The greatest threats to all three listed fish species in the action area continue to be reduced stream flow, decline in water quality, changes in primary productivity and foodweb dynamics, and predation by nonindigenous aquatic species (Bodner *et al.* 2007).

## **Huachuca Water Umbel**

*A. Status of the species within the action area*

The status of Huachuca water umbel has improved since the 2008 BO was completed. At this time the plant appeared to be recolonizing Cienega Creek in several locations. BLM surveyed for Huachuca water umbel in June and July 2011 and found 100 patches of the plant totaling approximately 0.34 acres of occupied habitat. BLM identified patches of the plant along Cienega Creek, lower Empire Gulch, and Mattie Canyon. Occupied habitat along Cienega Creek has expanded and Mattie Canyon is a new location for the species.

*B. Factors affecting the species' environment within the action area*

Reduced stream flow, competition with nonnative plant species, and changes in stream hydrology and loss of stream bank stability from livestock grazing continue to be the greatest threat to Huachuca water umbel in the action area.

## **EFFECTS OF THE PROPOSED ACTION**

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

### General considerations

The aggregate effects of land management activities on Las Cienegas NCA are likely to be additive to or magnify the effects of any one activity to the watershed and the stream channels within it. These activities include but are not limited to past and present livestock grazing, recreation, road placement and extent, mining, surface water diversions, groundwater pumping, introductions of nonindigenous plants and animals, and off-road vehicle travel and were described and discussed in the original consultation for the Las Cienegas RMP (22410-2002-F-0162). Many watershed impacts are cumulative, slow acting, and show effects on a time scale not usually considered by land managers. Over 200 years of human activity in the action area has disrupted the original flow conditions in many areas and resulted in an altered hydrograph and generally lower water tables (Rabini 1992). In this BCO, we limit our discussion of effects to the currently proposed action, understanding that other actions and effects as described in the 2002 BCO are ongoing.

### Establishment of new populations

The establishment of new, self-sustaining populations of the Chiricahua leopard frog, Gila chub, Gila topminnow, desert pupfish, northern Mexican gartersnake, and Sonoran mud turtle at livestock ponds on Las Cienegas NCA would have the potential to significantly improve the conservation status of all species and help meet conservation and/or recovery goals for each species. Establishment of both predator and prey within stock tanks would result in some loss of individuals through predation. Some level of habitat displacement of Gila topminnow by desert pupfish may occur when they occur in the same site. Adverse effects related to establishment of new populations will be minimized through implementing the conservation measure that requires BLM to work with USFWS and AGFD to develop a plan to monitor aquatic animal species and habitat to identify factors related to the success and failure of the newly established population(s).

### Stock tank site modification and maintenance

Adverse effects from initial stock tank modification and maintenance include contamination of the site from pollutants such as oil from equipment used to dig ponds, build fences, and install wells. These pollutants could kill or harm listed species once they are released to a site. Contamination will be minimized by using only well maintained leak-free equipment for pond modification and future maintenance, and refueling and repairing equipment away from the project sites. While providing a perennial source of water at stock ponds will greatly benefit species released there, it also has the potential to spread disease and nonnative species throughout the landscape. Once a stock pond contains water, there is also potential of spreading amphibian chytrid between wet sites by human activities which could cause harm to the Chiricahua leopard frog. To minimize the spread of amphibian chytrids in the action area, the proposed action requires BLM to follow standard operating procedures for working in leopard frog habitat including disinfecting all field equipment to prevent the spread of amphibian chytrid. Another conservation measure requires BLM to select plants and logs used to create habitat in ponds from sources unlikely to be contaminated with Bd, or decontaminate plants and logs prior to use in stock pond habitats. Perennial stock ponds can provide refuge for non-indigenous aquatic species that could disperse among ponds and also establish populations in Cienega Creek. Since stock ponds included in the proposed action will no longer be allowed to dry, the threat of nonnative aquatic species dispersal and establishment will increase. BLM has included several conservation measures to minimize this threat, including but not limited monitoring stock ponds for the presence of bullfrogs and other non-native species twice a year, and removing bullfrogs immediately if they are found.

Lentic habitats do not maintain open habitats over time through scouring as do lotic habitats, requiring management of aquatic vegetation at many of the stock ponds. Vegetation management could include pulling large statured aquatic plants by hand, using a backhoe, or cutting. Such mechanical activities may temporarily degrade water quality by increasing turbidity and hydrogen sulfide and decreasing dissolved oxygen levels. This may lead to stress or mortality of established animals present in the stock pond. Vegetation management activities in water could adversely affect fish and frogs, while activities in shallow water or on saturated soil could affect Huachuca water umbel, young fish, and frogs. While short-term indirect effects to all five species will likely occur during all types of vegetation management, the proposed conservation measure of salvaging and temporarily holding native fish, frogs, turtles and snakes from a pond scheduled for dredging will minimize effects of the most destructive form of vegetation management.

### Livestock grazing

Although the time cattle spend in each pasture on Las Cienegas NCA is limited annually, cattle are known to spend a disproportionate time in the wetted areas of these pastures, including stock ponds, and therefore

have the potential to impact established listed species and the quality of their habitats. Livestock grazing in the action area is likely to affect all listed species that may be established at earthen ponds included in the proposed action that will not be fenced (e.g., one of two twin ponds) or are partially fenced (e.g. large ponds). In addition, livestock may periodically gain access to the exclosure areas by going through, under, or over fences; fences are damaged from tree fall, fires, and floods; and gates may be left open. Therefore, periodic, light impacts are also expected within some of the exclosures. Livestock grazing in occupied habitats of newly established species in the action area may result in direct effects including trampling of: 1) egg masses, tadpoles, or metamorphs of Chiricahua leopard frogs, 2) eggs or fry of Gila chub, Gila topminnow, and desert pupfish, and 3) Huachuca water umbel plants. Livestock can injure or kill young fish by stepping on them (Roberts and White 1992). Eggs, tadpoles, and metamorphosing Chiricahua leopard frogs are probably trampled by livestock on the perimeter of stock ponds (Bartlett 1998, USFWS 2011). Adult fish and frogs are more likely to avoid trampling when they are active by swimming away. However, leopard frogs are known to hibernate on the bottom of ponds where they may be subject to trampling during the winter months (Harding 1997). Implementation of the conservation measures will minimize trampling of all five species.

Livestock grazing in the action area may also cause indirect effects to listed aquatic vertebrate species established at stock ponds by decreasing water availability, diminishing habitat, disrupting the food chain, facilitating non-native predator dispersal, and/or spreading disease. Riparian plant communities with rooted plants retard bank erosion, filter sediments out of the water, build and stabilize banks and pond bottoms, and provide shade and nutrients for aquatic species. Functional riparian areas act as “sponges” during high water periods and raise water tables maintaining stream water during dry seasons, resulting in more flow throughout the year (Belsky *et al.* 1999, Kauffman and Krueger 1984). Therefore the loss of riparian vegetation can result in a negative feedback loop where conditions continue to break down until active management is needed to repair or retard degraded areas. Vegetation along the perimeter of stock ponds provides both allochthonous (produced outside stream system) and autochthonous (produced within stream ecosystem) food sources for macroinvertebrates. The quantity and quality of these food sources play a critical role in regulating the macroinvertebrate assemblage that is present in these systems (Gregory *et al.* 1991). Macroinvertebrates are a primary food source for aquatic vertebrates including Chiricahua leopard frogs, Gila chub, Gila topminnow, and desert pupfish. Alterations to the food web at the lower levels can result in reduced forage availability and would have repercussions for higher-level consumers, and consequently cause harm these species.

Livestock grazing of vegetation around stock ponds may also reduce available cover, which may have adverse effects on water quality and temperature, and may increase predation of native fish and frogs by northern Mexican gartersnakes, larger native fish, as well as non-native fish and bullfrogs. On the other hand, dense shoreline or emergent vegetation in the absence of grazing may favor some predators, such as garter snakes, so that frogs may benefit from some open ground for basking and foraging. Livestock may also diminish water quality in stock ponds for all species by increasing sedimentation via trampling (increased turbidity), defecation, and year-round herding between pastures. Sediment can alter primary productivity and fill interstitial spaces in streambed materials with fine particulates that impede water flow, reduce oxygen levels, and restrict waste removal (Chapman 1988). Livestock watering can also increase turbidity levels and lead to decreased primary productivity and water quality degradation from heavy accumulation of livestock feces. At a stock pond heavily used by cattle in the Chiricahua Mountains, Sredl *et al.* (1997) attributed a die-off of Chiricahua leopard frogs to cattle-associated water quality degradation including an elevated hydrogen sulfide concentration. There is also the possibility that livestock could transport amphibian chytrids from one stock tank to another and harm Chiricahua leopard frogs. For transport of amphibian chytrid to occur there would need to be an aquatic microclimate

that could sustain the fungus for the trip from one water to another, such as in the hair, mud on the animal, or in the hoof keratin. This is also true of all wildlife species that may travel from one aquatic site to another, such as white-tailed deer, javelina, waterfowl, and aquatic insects. While short-term indirect effects to all five species will likely occur, the proposed conservation measures will ensure that the effects are minimized by creating habitat inaccessible to livestock via twin ponds, partially fenced ponds, use of livestock drinkers outside of occupied ponds, use of robust fencing materials, and monitoring and maintenance of fence integrity.

For the Huachuca water umbel, occasional trampling or periodic disturbance of stock pond banks by livestock may mimic natural forms of disturbance that recreate early successional stages favorable for population expansions. However, continual or frequent disturbance, or severe damage pond banks, such as down-cutting would likely reduce populations or eliminate them from areas. Additional information exists suggesting reduced levels of grazing can benefit the water umbel and its critical habitat. Monitoring of umbel populations at Cottonwood Spring near Patagonia occurred before and after livestock were removed. Within two years following removal of cattle, the area became wetter and the riparian area expanded. The area occupied by the umbel increased, although it was becoming less dense in areas that were growing over with cattails and other wetland plant species (D. Gori and P. Warren, pers. comm., *in* Falk 1998).

### Recreation

Recreation has potential for adverse effects to newly established populations of listed species including stress to animals from continual disturbance, vandalism of frog fences, and introduction of nonindigenous species into habitat occupied by listed species. It is possible, but unlikely, that aquatic animals could experience stress from excessive disturbance from people that wade or try to capture them. There is likely to be a low level of recreational activity of the type that may harm, harass, or injure fish or frogs at most of the reestablishment sites. Mortality and injury of Huachuca water umbel may also occur from wading or wildlife observation from water's edge at reestablishment sites. Many of the sites are remote and would have almost no recreational activity. However, Cottonwood Windmill Tank and other sites with good public access such as Maternity Well, Road Canyon, and Cienega Ranch Tank are anticipated to have large numbers of people visit. Because water will be present year-round in stock ponds that serve as habitat for established species, the opportunity for visitors to release nonindigenous species into stock ponds will increase with this proposed action. The release of nonindigenous fish and bullfrogs by the public has been a major factor in the spread of these species (Moyle 1976a, 1976b, Welcomme 1998). Fencing will limit human access to ponds via climbing over fencing since entrances will be locked. Educational signs at all locations where species are released should discourage activity that disrupts conservation efforts at these sites and promote a sense of stewardship.

### **CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to listed species include ongoing activities in the watersheds in which the species occurs, such as livestock grazing and associated activities outside of Federal allotments, irrigated agriculture, groundwater pumping, stream diversion, bank stabilization, channelization without a Federal

nexus, and recreation. Increasing recreational, residential, or commercial use of non-Federal lands near riparian areas would likely result in increased cumulative adverse effects to occupied, as well as potentially occupied native aquatic animal habitat through increased water use, increased pollution, and increased alteration of the stream banks through riparian vegetation suppression, bank trampling, changing flow regimes, and erosion.

Activities such as illegal immigration and smuggling along the U.S./Mexico border are occurring on Las Cienegas NCA. Impacts from these activities include increases in human traffic, deposition of trash, new trails from human traffic, soil compaction and erosion, fire risk from human traffic, water contamination, introduction to and spread of non-native species. Soil compaction and erosion can result in increased sediment transport in run-off and, consequently, cause harm to all five listed species through water quality degradation. Fires could have catastrophic effects to watersheds with potential for ash and sediment flow into habitats of all covered species, and associated erosion of channels. The introduction and spread of non-native species could harm all covered species.

Natural events such as floods, the effects of which may be exacerbated by human activities, are also expected and have the potential to spread non-native species and/or significantly affect the species within the natural wetland areas. The potential for such flooding increases should fires occur within or adjacent to the action area, removing protective vegetation and increasing the amount of debris associated with flood events.

It is well known that southeastern Arizona and much of the American southwest have experienced serious drought recently. What is less certain is how long droughts will last. State-of-the-art climate science does not yet support multi-year or decade-scale drought predictions.

However, instrumental and paleoclimate records from the southwest indicate that the region has a history of multi-year and multi-decade drought (Hereford *et al.* 2002, Sheppard *et al.* 2002, Jacobs *et al.* 2005). Multi-decade drought in the southwest is controlled primarily by persistent Pacific Ocean-atmosphere interactions, which have a strong effect on winter precipitation (Brown and Comrie 2004, Schneider and Cornuelle 2005); persistent Atlantic Ocean circulation is theorized to have a role in multi-decadal drought in the southwest, particularly with respect to summer precipitation (Gray *et al.* 2003, McCabe *et al.* 2004). Given these multi-decade “regimes” of ocean circulation, and the severity and persistence of the present multi-year drought, there is a fair likelihood that the current drought will persist for many more years (Stine 1994, Seager *et al.* 2007), albeit with periods of high year-to-year precipitation variability characteristic of southwest climate.

The information on how climate change might impact Arizona and adjoining states is less certain than current drought predictions. However, virtually all climate change scenarios predict that the American southwest will get warmer during the 21st century (Intergovernmental Panel on Climate Change 2001, 2007). Precipitation predictions show a greater range of possibilities, depending on the model and emissions scenario, though precipitation is likely to be less (U.S. Global Change Research Program 2001, Seager *et al.* 2007). To maintain the present water balance with warmer temperatures and all other biotic and abiotic factors constant, precipitation will need to increase to keep pace with the increased evaporation and transpiration caused by warmer temperatures.

Continuing drought and climate change, when added to the historical and continuing threats, will make native aquatic species conservation in the action area even more difficult. The impact of site desiccation to frogs and fish is obvious. Many less obvious effects could occur with drought and a warmer climate. A site with reduced streamflow, or a pond or pool with low water levels could become fishless due to

reduced dissolved oxygen. We have seen this occur at three important natural Gila topminnow sites, including Cienega Creek. Nonnative aquatic species may become more restricted in distribution as well; however, both native and nonnative species will be competing for remaining aquatic habitats, and extensive case history suggests that nonnative species could out-compete the natives. Disease and parasites will become more prevalent in warmer water conditions such as *Lernaea* which is already found on razorback sucker in the Verde River.

Drought and climate change will also impact watersheds and subsequently the water bodies in those watersheds. Long term drought will affect how ecosystems and watersheds function. These changes will cause a cascade of ecosystem changes, which may be hard to predict and are likely to occur non-linearly (Seager *et al.* 2007). As an example, drought and climate change will cause changes in fire regimes in all vegetation communities in the action area. The timing, frequency, extent, and destructiveness of wildfires are likely to increase and may facilitate the invasion and increase of nonindigenous plants. These changed fire regimes will change vegetation communities, the hydrological cycle, and nutrient cycling in affected watersheds (Brown *et al.* 2004). Some regional analyses conservatively predict that acreage burned annually will double with climate change (MacKenzie *et al.* 2004). Such watershed impacts could cause enhanced scouring and sediment deposition, more extreme flooding (quicker and higher peak flows), and changes to water quality due to increases in ash and sediment within stream channels. Severe watershed impacts such as these, when added to reductions in extant aquatic habitats, will severely restrict sites available for the conservation of native frogs, fish, and other aquatic vertebrates and make management of extant sites more difficult.

Many of the predictions about the impacts of climate change are based on modeling, but many predictions have already occurred. The tree die-offs and fires that have occurred in the southwest early in this century show the impacts of the current drought. Because of drought, climate change, and human population growth, negative effects to aquatic habitat in the action area continue to occur. The basin's rivers, streams, and springs continue to be degraded, or lost entirely.

## CONCLUSION

After reviewing the current status of the Chiricahua leopard frog, Gila chub, Gila topminnow, desert pupfish, and Huachuca water umbel, the environmental baseline for the action area, the effects of the proposed action as described in this and supporting documents, and the cumulative effects, it is the USFWS's biological opinion that the action of BLM on Las Cienegas NCA, as proposed, is not likely to jeopardize the continued existence of Chiricahua leopard frog, Gila chub, Gila topminnow, desert pupfish, and Huachuca water umbel. Our rationale for our conclusions is summarized as follows:

1. Populations of these species do not currently exist at the sites proposed under this action. Establishing populations at these sites will not jeopardize source populations and the loss of populations or individuals resulting from the proposed actions will not affect the existing baseline for these species;
2. Most of the impacts from the proposed action will be transitory;
3. Both short-and long-term effects have a small footprint;
4. Conservation measures proposed by the BLM will reduce or eliminate impacts;

5. Natural trophic dynamics among the species will be encouraged, and ecological condition of the area will continue to be maintained and improved in accordance with the RMP;
6. Inter-specific impacts of multiple aquatic species present at stock ponds should not preclude establishment of viable populations; and
7. The proposed action, including conservation measures, is specifically designed to promote conservation and recovery of species protected under the Act.

The conclusions of the biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that are incorporated into the project design.

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Section 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Action prohibits the removal and reduction to possession of federally listed endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

The measures described below are non-discretionary, and must be undertaken by you so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. You have a continuing duty to regulate the activity covered by this incidental take statement. If you (1) fail to assume and implement the terms and conditions or (2) fail to require the (applicant) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, you must report the progress of the action and its impact on the species to us as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

## **AMOUNT OR EXTENT OF TAKE**

The USFWS anticipates that the proposed action may result in incidental take of Chiricahua leopard frog, Gila chub, Gila topminnow, and desert pupfish. Incidental take will be difficult to detect for the following reasons: dead individuals of these species are difficult to find, cause of death may be difficult to determine, and losses may be masked by seasonal fluctuations in numbers or other causes. The incidental take is expected to be in the form of harm, harassment, kill, and pursuit from management of stock ponds, management actions to remove nonnative aquatic species, predation of one released species on another, livestock grazing, and recreation.

Because the current proposed action implements the approved Las Cienegas RMP, the incidental take anticipated here is in addition to the incidental take anticipated in the original 2002 BCO for the RMP. We anticipate that the proposed action could result in up to 100% loss of any or all of the five species at each site. Therefore, we will consider incidental take to have been exceeded if 50 percent reestablishment sites fail due to one or more of the six causes of take.

## **EFFECT OF THE TAKE**

In this BCO, the USFWS determines that this level of anticipated take is not likely to jeopardize the continued existence of Chiricahua leopard frog, Gila chub, Gila topminnow, and desert pupfish. Take would be of individuals or populations that do not currently exist and, therefore, do not contribute to the existing status and baseline for these species.

## **REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS**

The following reasonable and prudent measure(s) are necessary and appropriate to minimize take of the Chiricahua leopard frog, Gila chub, Gila topminnow, and desert pupfish. To be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures and outline required reporting and monitoring requirements. These terms and conditions are non-discretionary. The following reasonable and prudent measures and terms and conditions are necessary and appropriate to minimize take:

1. The BLM shall request renewal of its 10(a)(1)(A) research and recovery permit in a timely manner throughout the project period to implement this action.
  - a. The BLM shall contact the AZESO by March 1, 2012 to discuss changes to its current 10(a)(1)(A) permit that are needed to implement the proposed action.
  - b. The BLM shall submit requests for subsequent renewals at least 90 days prior to the expiration date of the current active 10(a)(1)(A) permit so that it remains viable through the life of the project.
2. The BLM shall monitor implementation of the proposed action and any resulting incidental take and report to the USFWS and AGFD the findings of that monitoring.
  - a. The BLM shall submit a report to the Arizona Ecological Services Office within one year after stocking begins, and annually thereafter for five years after the final site is stocked. This report will briefly document the portions of the proposed actions that have been implemented, the effectiveness of the conservation measures, status of the species in each livestock watering

tank, and, if any frogs are found dead, the suspected cause of mortality. The report shall also make recommendations, as needed, for modifying or refining these terms and conditions to enhance protection of the Chiricahua leopard frog or reduce needless hardship on the BLM.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. The BLM must immediately provide an explanation of the causes of the taking and review with the USFWS the need for possible modification of the reasonable and prudent measures, or reinitiation of consultation.

#### **Disposition of Dead or Injured Listed Species**

Upon locating a dead, injured, or sick listed species initial notification must be made to the USFWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment, and in handling dead specimens to preserve the biological material in the best possible state.

#### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend that BLM continues working with Sonoita Valley Planning Partnership and AGFD to verify presence or absence of nonnative aquatic species on all BLM lands in the Upper Cienega Creek, Upper Sonoita Creek, and Babocomari watersheds. If nonnative aquatic species are found, we recommend that you work with AGFD and our office to develop a plan or outline to remove nonnative aquatic species from the BLM lands in this watershed.

We recommend that BLM coordinate with Sonoita Valley Planning Partnership, AGFD, and our office in efforts to work with private landowners to renovate any source populations of nonnative aquatic species from their lands in the Empire-Cienega Resource Conservation Area, and

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

#### **REINITIATION NOTICE**

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed

species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your efforts and coordination to recover listed species on Las Cienegas NCA. No further section 7 consultation is required for this project at this time. Should project plans change, or if information on the distribution or abundance of listed species or critical habitat becomes available, those determinations may need to be reconsidered. Please refer to the consultation number 22410-2002-F-0162-R001 in future correspondence concerning these projects.

Should you require further assistance or if you have any questions, please contact Cat Crawford at (520) 670-6150 (x232) or Scott Richardson at (x242).



Steven L. Spangle

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cc (electronic copy):

Fish and Wildlife Service, Tucson, AZ (Attn: Jeff Servoss)  
Field Office Manager, Bureau of Land Management, Tucson, AZ (Attn: Jeff Simms)  
Chief, Nongame Branch, Arizona Game and Fish Department, Phoenix, AZ (Attn: Tom Jones)  
Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ (Attn: Tim Snow)

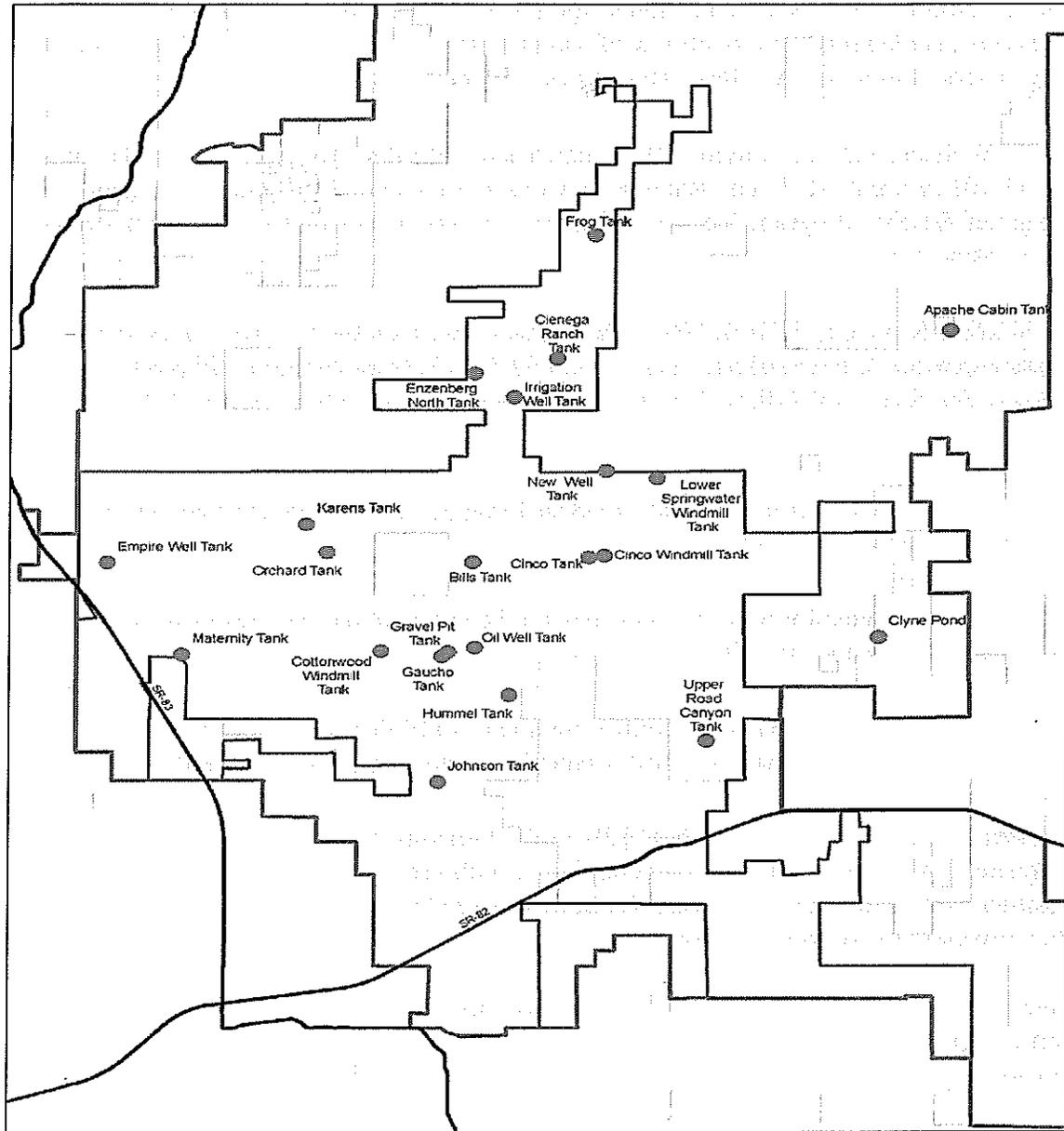
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Figure 1. Livestock watering facilities that are potential sites for aquatic species conservation on north end of Las Cienegas NCA.



Legend

- Private Lands
- Bureau of Land Management (BLM)
- BLM Wilderness Area
- Sonora Valley Aquation Planning District
- State Lands
- National Forest Lands (USFS)
- Forest Service Wilderness Area
- National Conservation Area
- State Wildlife Area
- National Park Service (NPS)
- NPS Wilderness Area
- Military Reservations/Corps of Engineers
- City, State, County Parks
- USFWS Service, National Wildlife Refuges
- USFWS Service Wilderness Area
- Bureau of Reclamation (BOR)
- County Lands
- Indian Lands or Reservations

● Frog Stocking Location



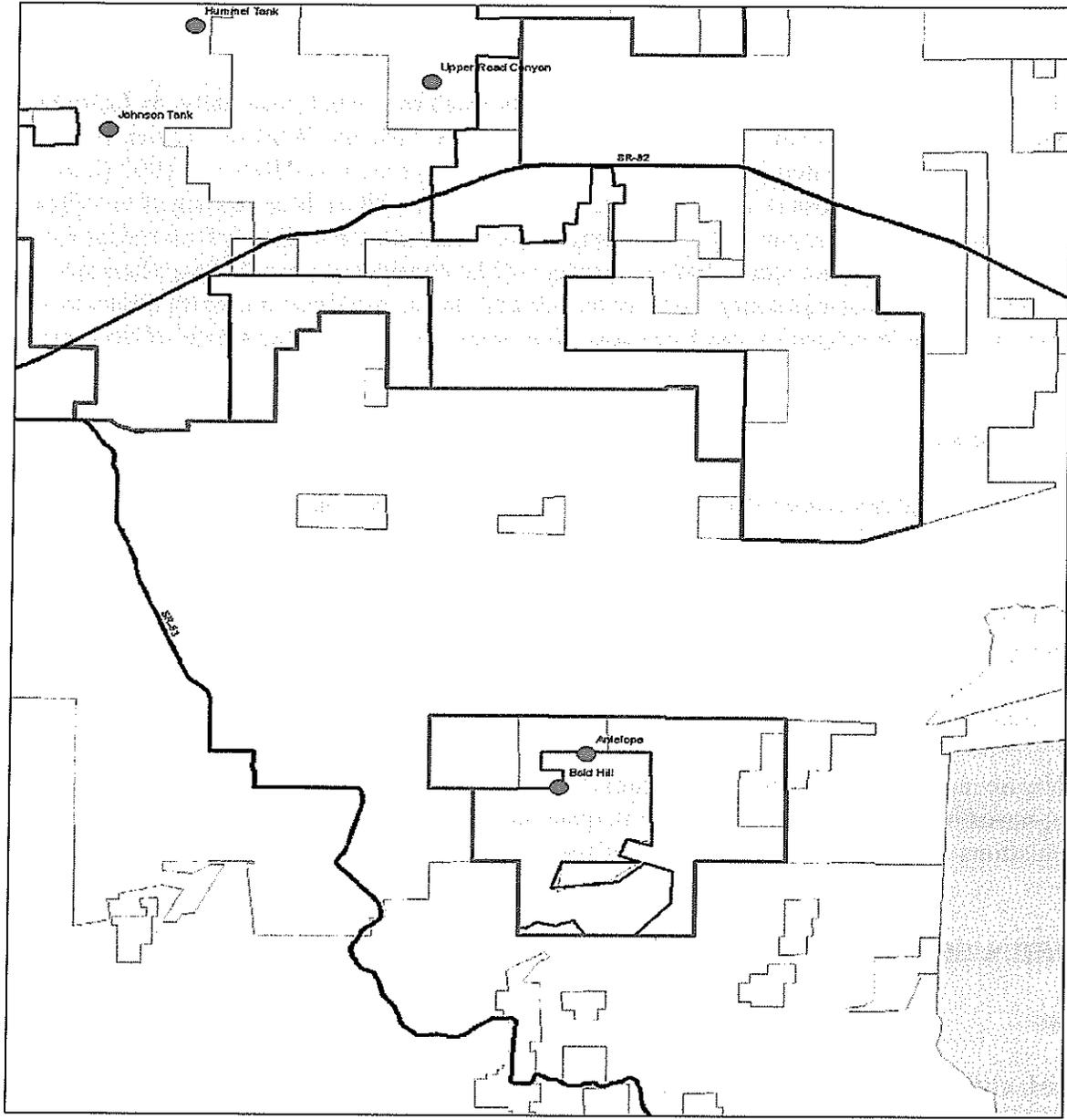
United States Department of the Interior  
 Bureau of Land Management  
 Tucson Field Office  
 Land Status updated as of August 2010  
 Map created on June 13, 2011

1 = 90,000



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Figure 2. Livestock watering facilities that are potential sites for aquatic species conservation on south end of Las Cienegas NCA.



- Legend**
- |                           |  |                                |  |
|---------------------------|--|--------------------------------|--|
| Private Lands             | Bureau of Land Management (BLM)          | BLM Wilderness Area            | Sonoma Valley Aquatic Planning District  |
| State Lands               | National Forest Lands (USFS)             | Forest Service Wilderness Area | National Conservation Area               |
| State Wildlife Area       | National Park Service (NPS)              | NPS Wilderness Area            | Military Reservations/Corps of Engineers |
| City, State, County Parks | USFWS Service, National Wildlife Refuges | USFWS Service Wilderness Area  | Bureau of Reclamation (BOR)              |
| County Lands              | Indian Lands or Reservations             |                                |  |
- Frog Stocking Location



United States Department of the Interior  
 Bureau of Land Management  
 Tucson Field Office  
 Land Status updated as of August, 2010  
 Map created on June 13, 2011

1 = 75,000



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Appendix A:

## CONCURRENCE AND CONFERENCE

### LESSER LONG-NOSED BAT

#### Background

The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) was listed (originally, as *Leptonycteris sanborni*; Sanborn's long-nosed bat) as endangered in 1988 (U.S. Fish and Wildlife Service 1988). No critical habitat has been designated for this species. A recovery plan was completed in 1997 (U.S. Fish and Wildlife Service 1997). Loss of roost and foraging habitat, as well as direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current endangered status of the species. The recovery plan states that the species will be considered for delisting when three major maternity roosts and two post-maternity roosts in the United States, and three maternity roosts in Mexico have remained stable or increased in size for at least five years, following the approval of the recovery plan.

#### Effects Determination

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the lesser long-nosed bat. We base this determination on the following:

- The lesser long-nosed bat may use water at livestock ponds at night while feeding in the area or traveling to other areas, but no activities are planned at night;
- No forage plants or potential roost sites will be impacted by project actions; and
- There are no known ecological interactions between the reestablished aquatic species and lesser long-nosed bats, therefore, we do not anticipate any adverse effects to the lesser long-nosed bat as populations of the target species are established.

### CHIRICAHUA LEOPARD FROG PROPOSED CRITICAL HABITAT

#### Background

We proposed critical habitat for the Chiricahua leopard frog on March 15, 2011 (USFWS 2011a; 76 FR 14126) and subsequently revised proposed critical habitat for the species on September 21, 2011 (USFWS 2011b; 76 FR 58441). Proposed critical habitat includes metapopulations and isolated robust populations organized into 40 units in Arizona and New Mexico. Primary constituent elements of habitat essential to the conservation of the Chiricahua leopard frog are proposed as follows:

- 1) Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:
  - (a) Standing bodies of fresh water (with salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present), including natural and manmade (e.g., stock) ponds, slowmoving streams or pools within streams, off-channel pools, and other ephemeral or permanent water bodies that typically hold water or rarely dry for more than a month. During periods

of drought, or less than average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but they would still be considered essential breeding habitat in non-drought years.

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

(c) Nonnative predators (*e.g.*, crayfish (*Orconectes virilis*), American bullfrogs, nonnative predatory fishes) absent or occurring at levels that do not preclude presence of the Chiricahua leopard frog.

(d) Absence of chytridiomycosis, or if present, then environmental, physiological, and genetic conditions are such that allow persistence of Chiricahua leopard frogs.

(e) Upland areas that provide opportunities for foraging and basking that are immediately adjacent to or surrounding breeding aquatic and riparian habitat.

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

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

(b) In overland and nonwetted corridors, provides some vegetation cover or structural features (*e.g.*, boulders, rocks, organic debris such as downed trees or logs, small mammal burrows, or leaf litter) for shelter, forage, and protection from predators; in wetted corridors, provides some ephemeral, intermittent, or perennial aquatic habitat.

(c) Are free of barriers that block movement by Chiricahua leopard frogs, including, but not limited to, urban, industrial, or agricultural development; reservoirs that are 50 acres (20 hectares) or more in size and contain predatory nonnative fishes, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that physically block movement. With the exception of impoundments, livestock tanks, and other constructed waters, critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries.

There is one proposed critical habitat unit on Las Ciengas NCA, including approximately 5 stream miles of Empire Gulch and 2 stream miles of Cienega Creek and Cinco Ponds. One stock pond included in the proposed action is within proposed critical habitat, although it currently does not have the primary constituent elements of critical habitat for Chiricahua leopard frog. The renovation and use of this site by Chiricahua leopard frogs would require a second pond to be constructed for livestock, which would be located outside of proposed critical habitat.

The proposed action occurs in the floodplains of Cienega Creek and Empire Gulch that currently do not have the primary constituent elements of critical habitat for Chiricahua leopard frog.

### *Effects Determination*

After reviewing the current status of Chiricahua leopard frog, the environmental baseline for the action area, the cumulative effects, it is the USFWS's conference opinion that the action proposed by BLM is

not likely to destroy or adversely modify proposed critical habitat for the Chiricahua leopard frog. We base this determination on the following:

- Adding a perennial source of water to the stock pond included in proposed critical habitat would encourage development of PCE 1 at this site;
- If Chiricahua leopard frogs are released into the stock pond within proposed critical habitat, it is likely to benefit critical habitat for Chiricahua leopard frogs by creating PCE 1, thus allowing the species to use a greater extent of critical habitat than is currently available; and
- The conservation measures included in the proposed action would reduce the chance for nonnative species to further invade proposed critical habitat.

This concludes the conference for the proposed action. BLM may ask the USFWS to confirm the conference opinion as a biological opinion issued through formal consultation if proposed critical habitat for the Chiricahua leopard frog is designated. The request must be in writing. If the USFWS reviews the proposed action and finds there have been no significant changes in the action planned or in the information used during the conference, the USFWS will confirm the conference opinion as the biological opinion for the proposed action and no further section 7 consultation will be necessary.

After designation of critical habitat for the Chiricahua leopard frog and any subsequent adoption of this conference opinion, the BLM shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

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