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February 23, 2004

Ms. Elaine J. Zieroth  
Forest Supervisor  
Apache-Sitgreaves National Forests  
P.O. Box 640  
Springerville, Arizona 85938-0640

Re: Apache Trout Enhancement Projects – Second Reinitiation

Dear Ms. Zieroth:

Thank you for your request for reinitiation of formal consultation pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation was dated December 8, 2003 and received by us on December 10, 2003. The project is located within the Apache-Sitgreaves National Forests (Forest) in Apache and Greenlee counties, Arizona.

This biological opinion analyzes the effects of the proposed changes to the Apache trout Enhancement Project, on the threatened Mexican spotted owl (*Strix occidentalis lucida*), Apache trout (*Oncorhynchus apache*), loach minnow (*Tiaroga cobitis*) and its critical habitat, and Little Colorado spinedace (*Lepidomeda vittata*). The Forest Service also requested our concurrence that the proposed project may affect, but is not likely to adversely affect, the threatened Chiricahua leopard frog (*Rana chiricahuensis*). Concurrence for the Chiricahua leopard frog was included in a letter to the Forest on December 29, 2003. However, on January 23, 2004, an unconfirmed report from July 2003 of Chiricahua leopard frogs in Fish Creek was reported. This would be the second unconfirmed sighting of Chiricahua leopard frogs in the Fish Creek watershed. The unconfirmed sightings do not constitute a record, but together with the presence of the species within the Black River watershed and suitable unsurveyed habitat within the action area, there is a reasonable certainty that Chiricahua leopard frogs are present with the action area. Therefore, on February 4, 2004 the Forest determined that those actions within the Black River watershed are likely to adversely affect the Chiricahua leopard frog. The species is included in this formal consultation. In addition, critical habitat for the Mexican spotted owl was proposed on November 18, 2003. The Forest determined that the proposed actions are not likely to result in the destruction or adverse modification of proposed critical habitat for the Mexican spotted owl. Because the final rule designating critical habitat for this species is likely to be published prior to the completion of the proposed action, the Forest requested conference on the action's effects on proposed critical habitat, in accordance with the procedures for formal consultation

(50 CFR 402.10(d)). The Forest has determined that the modifications to the proposed action may affect, but are not likely to adversely affect, proposed critical habitat of the species. Our concurrence with this determination is found in Appendix A.

This biological opinion is based on information provided in the December 3, 2003 biological assessment, telephone conversations with Terry Myers, Jerry Ward, and Vicente Ordonez of your staff, information provided during previous consultations on this action, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, fish reintroductions including barrier constructions and use of the fish toxicant Antimycin-A and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

### Consultation History

- In September 2000 the Forest and the US Fish and Wildlife Service began informal consultations regarding the Apache trout reintroduction project. Numerous emails from the Fish and Wildlife Service to the Forest outlined our initial concerns regarding the project. On February 19, 2002 we entered into formal consultation with the Forest for the reintroduction of Apache trout into streams on the Forest.
  - In a February 14, 2002 letter, the Forest requested a concurrence that the proposed action was not likely to adversely affect the endangered jaguar (*Panthera onca*) and southwestern willow flycatcher (*Empidonax traillii extimus*). In addition, the Forest determined that the proposed action will not jeopardize the continued existence of the Mexican gray wolf (*Canis lupus baileyi*) and the proposed Chiricahua leopard frog. We provided concurrences for these species in a letter dated February 28, 2002.
  - A final biological opinion was issued on April 19, 2002 for effects of the proposed Apache Trout Enhancement Project on Apache trout, Little Colorado spinedace, loach minnow and its critical habitat, bald eagle (*Haliaeetus leucocephalus*), and Mexican spotted owl.
  - On May 2, 2003 we received the Forest Service's request for reinitiation of consultation. A modification of the project was proposed that rescinded timing restrictions for certain actions during the breeding season of the MSO. The Forest determined that the elimination of timing restrictions would adversely affect Mexican spotted owls. These effects were not considered in the previous biological opinion and, therefore, required reinitiation of formal consultation (50 CFR 402.16[c]). In addition, a new breeding pair of bald eagles was located at Crescent Lake (within 5 mi of some project activities). This pair likely foraged within the action area. This new information was not considered in the previous opinion and also triggered a need for reinitiation (50 CFR 402.16[b]).

This second biological opinion only addressed effects to Mexican spotted owls and bald eagles from the proposed action. The April 19, 2002 opinion remained in effect for all

other species (Apache trout, Little Colorado spinedace, and loach minnow and its critical habitat).

- On June 19, 2003 a draft biological opinion was sent to the Forest and a final biological opinion was issued on July 2, 2003.
- On December 10, 2003 we received the Forest Service's request for reinitiation of consultation. The project is being modified to include renovation of four additional streams, to allow for a range of locations on where the proposed barriers can be constructed on the West and East Fork of the Little Colorado River, to allow for a barrier back-fill option, and to change the implementation schedule.

This reinitiation only covers those items mentioned in your December 10, 2003 correspondence. The two previous biological opinions remain in place for all other previously consulted upon actions.

- On February 19, 2004 a draft biological opinion was sent to the Forest for review.
- On February 22, 2004 we received the Forest's comments on the draft biological opinion.

## **BIOLOGICAL OPINION**

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

For a complete description of the proposed action please refer to the previous biological opinions and the Apache Trout Enhancement Project Environmental Assessment (USFS 2002a).

The project is being modified to include renovation of four additional streams, to allow for a range of locations on where the proposed barriers can be constructed on the West and East forks of the Little Colorado River (LCR), to allow for a barrier back-fill option, and to change the implementation schedule (Appendix B: Table 1). Specifically, the project now proposes to implement the following actions which were not previously considered:

1. Renovate four additional streams (Conklin, Centerfire, Boggy, and Wildcat creeks) (Appendix C: Figure 1) which bisect five MSO PACs and proposed MSO critical habitat not previously evaluated. Impacts to other listed or proposed species and their habitat will also be evaluated. Specific actions associated with renovation are described in the Environmental Assessment for an Apache Trout Enhancement Project (USFS 2004).
2. Execute a modified implementation schedule which will allow for a longer time-frame to complete proposed actions intended to reduce overall disturbance impacts. Appendix B: Table 1 displays actions completed in 2003 and proposed actions for 2004-2007.

3. Allow for a range of locations (up to ~ 5,500 feet from evaluated locations) on which to construct the upper barriers on the East and West forks of the LCR. This range of locations is necessary to facilitate use of on-site backfill material (natural rock flows located along drainages) if the backfill option is required. This could result in additional disturbance impacts to three MSO PACs and proposed MSO critical habitat not previously considered. Only one location is being considered for West Fork Black River barrier, and it was previously analyzed. Additionally, the two South Fork Little Colorado River barriers are only considered for one location. This could result in additional impacts that were not previously evaluated to Apache trout, loach minnow, Little Colorado spinedace, Chiricahua leopard frog, and proposed MSO critical habitat.
4. Timing of stream renovation and barrier construction has changed since the original schedule was completed.

### **Backfill Option**

One modification to the proposed action is the option of backfill at barrier sites. The specific method and extent of the backfilling and placement of filter cloth and/or plastic lining will vary at each barrier site and will be dependent on the various issues discussed within the Environmental Analysis. The volume of backfill associated with each barrier site is summarized in Appendix B, Table 2. These volumes are the minimum amounts necessary to ensure the integrity of the structures and the maximum amounts necessary to ensure that no water is stored as a result of the structures. Backfill materials will be hand-carried and placed from nearby rock source during construction of the East and West forks Little Colorado barriers. Materials will be trucked in and placed at the remaining barrier sites.

### **Status of the Species (range wide and/or recovery unit)**

#### **Mexican Spotted Owl**

The status of the species is largely the same as described in the July 2003 biological opinion. Currently, catastrophic wildfire is probably the greatest threat to MSO within the Upper Gila Mountains RU. As throughout the West, fire intensity and size have been increasing within this geographic area. Table 1 shows several high-intensity fires that have had a large influence on MSO habitat in this RU in the last decade. The information in Table 1 is not a comprehensive analysis of fires in the Upper Gila Mountains RU or the effects to MSO. However, the information does illustrate the influence that stand-replacing fire has on current and future MSO habitat in this RU. This list of fires alone estimates that approximately 11% of the PAC habitat within the RU suffered high- to moderate-intensity, stand-replacing fire in the last seven years.

**Table 1.** Some recent influential fires within the Upper Gila Mountains Recovery Unit, approximate acres burned, number of PACs affected, and PAC acres burned.

<b>Fire Name</b>	<b>Year</b>	<b>Total Acres Burned</b>	<b># PACs Burned</b>	<b># PAC Acres Burned</b>
Rhett Prescribed Natural Fire	1995	20,938	7	3,698
Pot	1996	5,834	4	1,225
Hochderffer	1996	16,580	1	190
BS Canyon	1998	7,000	13	4,046
Pumpkin	2000	13,158	4	1,486
Rodeo-Chediski	2002	462,384	55	~33,000
<b>TOTAL</b>		<b>525,894</b>	<b>84</b>	<b>~43,645</b>

Since the owl was listed, we have completed or have in draft form a total of 127 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 356 PACs. The form of this incidental take is almost entirely harm or harassment. These consultations have primarily dealt with actions proposed by the Forest Service, Region 3. However, in addition to actions proposed by the Forest Service, Region 3, we have also reviewed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, National Park Service, and Federal Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military and sightseeing overflights, and other activities. Only one of these projects (release of site-specific owl location information) has resulted in a biological opinion that the proposed action would likely jeopardize the continued existence of the MSO.

In 1996, we issued a biological opinion on Forest Service Region 3's adoption of the Recovery Plan recommendations through an amendment of their Forest Plans. In this non-jeopardy biological opinion, we anticipated that approximately 151 PACs would be affected by activities that would result in incidental take of MSOs, with approximately 91 of those PACs located in the Upper Gila Mountains RU. In addition, we completed a reinitiation of the 1996 Forest Plan Amendments biological opinion which anticipated the additional incidental take of five MSO PACs in Region 3 due to the rate of implementation of the grazing standards and guidelines, for a total of 156 PACs. To date, consultation on individual actions under the amended Forest Plans have resulted in 271 PACs adversely affected, with 156 of those in the Upper Gila Mountains RU.

### Apache Trout

The status of this species remains largely unchanged from the description in the April 2002 biological opinion on this project.

Our information indicates that, rangewide, 13 formal consultations have been completed or are underway for actions affecting Apache trout (Appendix D). Adverse effects to Apache trout have occurred due to these projects and many of these consultations have included reasonable and prudent measures to minimize effects to Apache trout. The Forest Service, White Mountain Apache Tribe, Fish and Wildlife Service, AGFD, and other cooperators are currently implementing many projects and recovery actions that provide habitat protection for Apache trout.

### Loach minnow

The status of the species remains largely unchanged from the description in the April 2002 biological opinion.

### Little Colorado spinedace

The status of the Little Colorado spinedace remains largely the same as that described in the April 2002 biological opinion.

### Chiricahua leopard frog

The Chiricahua leopard frog was not included in the earlier biological opinions. It was listed as a threatened species without critical habitat on June 13, 2002 (U.S. Fish and Wildlife Service 2002). Included was a special rule to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Act. The species is an inhabitant of cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,281 to 8,890 feet in central and southeastern Arizona; west-central and southwestern New Mexico; and northern Sonora, the Sierra Madre Occidental of Chihuahua, and northern Durango, Mexico (Platz and Mecham 1984, Jennings and Scott 1993, Degenhardt *et al.* 1996, Sredl *et al.* 1997, Sredl and Jennings in press). Reports of the species from the State of Aguascalientes (Diaz and Diaz 1997) are questionable; however, the distribution of the species in Mexico is unclear due to limited survey work and the presence of closely related taxa (especially *Rana montezumae*) in the southern part of the range of the Chiricahua leopard frog. Of sites occupied by Chiricahua leopard in New Mexico frogs from 1994-1999, 67 percent were creeks or rivers, 17 percent were springs or spring runs, and 12 percent were stock tanks (Painter 2000). In Arizona, slightly more than half of all known historical localities are natural lotic systems, a little less than half are stock tanks, and the remainder are lakes and reservoirs (Sredl *et al.* 1997). Sixty-three percent of populations extant in Arizona from 1993-1996 were found in stock tanks (Sredl and Saylor 1998). Northern populations of the Chiricahua leopard frog along the Mogollon Rim and in the mountains of west-central New Mexico are disjunct from those in southeastern Arizona,

southwestern New Mexico, and Mexico. Further information on the status of this species is summarized on our web page ([arizonaes.fws.gov](http://arizonaes.fws.gov)) under “Document Library”, “Document by Species”. If you cannot access this information, please contact this office.

## **ENVIRONMENTAL BASELINE [in the action area]**

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.

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

#### **MEXICAN SPOTTED OWL**

The overall status of Mexican spotted owls within the action area has not changed since the July 2, 2003 biological opinion. However, the modified proposed action will include additional Mexican spotted owls. The action area of the proposed project includes portions of twenty-two PACs (Appendix B: Table 1). Four of the seven sites proposed for barrier construction or reconstruction are either in a PAC or within ¼ mile of a PAC. Reaches of 11 of 15 streams that will be treated with Antimycin-A and restocked with fish occur within PACs. Suitable habitat for nesting spotted owls (i.e. mixed-conifer forests) that is neither in a PAC, nor inventoried for spotted owls, within drainages that will be treated with Antimycin-A and restocked with fish, also occurs in the action area (USFS 2002c).

Previous consultations on this project summarized ongoing actions in the project area which may affect the species including recreation and grazing. The previous biological opinion also anticipated incidental take associated with the Apache Trout Enhancement project. Reasonable and Prudent Measures and Terms and Conditions were issued to minimize that take but since the projects have largely not been implemented, the status of the species remains unchanged in the action area.

#### **APACHE TROUT**

The status of Apache trout within the action area has not changed since the April 19, 2002 biological opinion. However, some actions have been completed due to this project to enhance the status of species in the action area.

#### **LITTLE COLORADO SPINEDACE**

The status of Little Colorado spinedace within the action area has not changed since the April 19, 2002 biological opinion.

### **LOACH MINNOW**

The status of loach minnow within the action area has not changed since the April 19, 2002 biological opinion.

### **CHIRICAHUA LEOPARD FROG**

Although Chiricahua leopard frogs occur in the watershed of the proposed project, it is not known if this species occurs within the action area, as surveys in the action area are ongoing. However, Chiricahua leopard frogs occur at Three Forks along the East Fork Black River, within the Black River Watershed. Chiricahua leopard frogs from Three Forks have been introduced into Rudd Creek over the last several years, although it is generally thought that this population is extirpated. The Forest and Arizona Game and Fish Department are planning on releasing frogs from the Three Forks population at Sierra Blanca which is northeast of Three Forks on Boneyard Creek. Additionally, there are two unconfirmed sightings in the Fish Creek watershed. One sighting was reported in May 2002 and another in June 2003.

The action area also contains suitable habitat that may support Chiricahua leopard frog populations. Since Chiricahua leopard frogs are generalists, almost all of the stream systems in the action area contain pockets of suitable habitat. Even though the Forest will be surveying all suitable habitat in the action area for Chiricahua leopard frogs, it should be noted that that negative survey results in complex habitats do not indicate with certainty the species is absent; however, if frogs are not detected, the species is likely rare or absent (J. Rorabaugh, U.S. Fish and Wildlife Service, pers. comm. 2003). Therefore, negative survey results will not definitively prove that the species is not within the action area. Given the amount of suitable habitat within the action area and the fact that surveys are incomplete, we believe it is reasonably certain that Chiricahua leopard frogs are present.

No previous consultations have anticipated take for the species in the action area.

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

The factors affecting the species' environment within the action area are largely the same as the April 2002 biological opinion.

### **EFFECTS OF THE 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.

#### DIRECT AND INDIRECT EFFECTS

##### MEXICAN SPOTTED OWL

The action area of the proposed project includes portions of twenty-two PACs. The proposed action will affect some of the MSOs by causing the disruption of various diurnal behaviors of individuals. All activities associated with the proposed action will occur during the daytime, greatly reducing the likelihood of disrupting foraging activities of any spotted owls. These daytime activities, however, may affect roosting owls (during the breeding and non-breeding seasons) and owls tending nests (incubating, brooding young, etc.).

Depending on the intensity of the activities, birds may respond to disturbances from the proposed activities during the breeding season by abandoning their nests or young, by altering their behavior such that they are less attentive to the young, which increases the risk of the young being preyed upon, or by disrupting feeding patterns, or by exposing young to adverse environmental stress (Knight and Cole 1995). Stocking of fish in proposed systems within the action area may occur within the breeding season of spotted owls. Except perhaps in very open situations (i.e. habitats that are not suitable for spotted owls) where All Terrain Vehicles may be used (Centerfire and Fish creeks), fish stocking activities will involve small numbers of people, and perhaps horses, walking along the creeks and releasing fish into the water. These activities will be of very short-duration. Effects from barrier construction are likely to be much noisier and of much longer duration than the “walk-through” type activities. The April 19, 2002 biological opinion contained an in depth analysis of barrier construction in relation to known PACs.

Four additional streams are proposed for renovation. No barrier construction or reconstruction work will be required in these streams, only antimycin application and fish stocking. The streams include Centerfire, Wildcat, Boggy, and Conklin creeks. Wildcat and Boggy creeks have no known occupied MSO habitat, but provide approximately 430 acres of unsurveyed potential MSO habitat. Centerfire Creek provides approximately 790 acres of unsurveyed MSO habitat and is within ½ mile of one PAC (#10109). Conklin Creek bisects five PACs (#10103, 10104, 10105, 10152, and 10156). Renovation and fish stocking activities will involve small numbers of people, and perhaps horses, walking along the creeks and releasing fish into the water. These activities will be of very short-duration and are not likely to disturb owls during the breeding season in a manner that would affect their breeding success or their health.

The location of lower barriers on the East and West forks of the Little Colorado River is being changed from a fixed location to a range of locations of up to 5,500 feet. The range of locations could result in barrier construction occurring closer to known MSO nest/roost sites in 2 PACs on the East and West forks of the Little Colorado River (PAC#s 010612, 10613). If backfill is

required at these sites there may be an increase in the disturbance level and the disturbance may occur for a longer duration. Barrier construction may occur during the Mexican spotted owl breeding season. Construction of barriers will likely take several weeks and cause increased noise levels.

Delaney *et al.* (1997) reviewed literature on the response of owls and other birds to noise and drew the following conclusions: 1) raptors are more susceptible to disturbance-caused nest abandonment early in the nesting season, 2) birds generally flush in response to disturbance when distances to the source are less than approximately 200 ft and when sound levels are in excess of 95 dBA, and 3) the tendency to flush from a nest declines with experience or habituation to the noise, although the startle response cannot be completely eliminated by habituation. FWS recommends limiting disturbing activities within 1,320 ft of MSO nest sites during the breeding season (March 1-August 31). In addition, Delaney *et al.* (1997) found that ground-based disturbances elicited a greater flush response than aerial disturbances.

Owls have more sensitive hearing than other birds (Bowles 1995). If loud sound arouses an animal, it has the potential to affect its metabolic rate by making it more active. Increased activity can, in turn, deplete energetic reserves (Bowles 1995). Loud human activity can cause raptors to expand their home ranges, but often the birds return to normal use patterns when the humans are not present (Bowles 1995). Such expansions in home ranges could affect the fitness of the birds, and thus their ability to successfully reproduce and raise young. Species that are sensitive to the presence of people may be displaced permanently.

Human activities associated with the salvage of live and dead fish and with the application of antimycin during the MSO breeding season may result in effects to the spotted owls in eighteen PACs (Appendix B: Table 5). In addition, these actions may disturb Mexican spotted owls that may inhabit the unsurveyed suitable habitat along Boggy Creek, Wildcat Creek, Centerfire Creek, Bear Wallow Creek, Corduroy Creek, Double Cienega Creek, Fish Creek, Hayground Creek, Stinky Creek, West Fork Black River, and the East, West, and South forks of the Little Colorado River during the breeding season. These actions will likely generate noise and commotion at varying levels and durations during the daytime. In general, these effects are likely to be of fairly short duration (~ 5 days) and may include awakening owls from daytime sleep or causing owls to flush from one perch site to another or flush from the nest. Increased activity of Mexican spotted owls during the daytime may expose individuals to diurnal predators such as northern goshawks (*Accipiter gentillis*). The magnitude and probability of these effects occurring depend on the proximity of roost or nest locations in these PACs. The nest location for many of these PACs is not known, so the degree of disturbance is unknown.

Swarthout and Steidl (2001) found that 95 percent of adult and juvenile owls became alert to approaching hikers at 180 feet (55 meters). Ninety-five percent of all adults flushed in response to approaches by a single hiker at 30 feet or less, while 95 percent of all juveniles flushed at 20 feet (6 meters) or less. Owls that had flushed previously were more likely to flush on subsequent approaches by humans. They note that the direct costs associated with responding to disturbance include energetic demands of avoidance flight and time lost that would be allocated to other

activities (such as foraging, resting, etc.). Additionally, energetic demands of avoidance flights increase heat production and can lead to use of alternative roosts in warmer areas. Owls that flush in response to disturbances also increase their exposure to predators (Swarthout and Steidl 2001).

Fish Creek renovation (including Double Cienega Creek, Corduroy Creek, and Ackre Lake) is currently scheduled for June 2004. This is one of the stream systems with crews of up to 20 individuals. The other stream system with crews of up to 20 individuals is the Centerfire Complex; however, the Forest is anticipating renovating in September 2007. Stream systems that may be renovated within the Mexican spotted owl breeding season are Fish Creek, Conklin Creek, South, East and West forks Little Colorado River, and the West Fork Black River. These stream systems are expected to use crews of 8-12 people (with the exception of Fish Creek that may use a crew of 20). Walk-through activities could occur in fifteen PACs (#10101, 10102, 10103, 10104, 10105, 10118, 10135, 10136, 10152, 10156, 10604, 10605, 10607, 10612, and 10613). The information presented by Swarthout and Steidl (2001) indicates that owls are disturbed by approaching humans and that they become more sensitive with repetitive approaches. With crews of up to 12 individuals working within PAC boundaries, it is therefore reasonable to conclude that the proposed action will cause short-term adverse effects to Mexican spotted owls.

Roosting non-breeding or dispersing spotted owls may be briefly disturbed during the implementation of the various proposed actions. Presumably, these effects could include awakening from daytime sleep, flushing from one perch site to another, or, in the case of sites at which barriers are being constructed, avoidance of these areas or temporarily leaving the area. The likelihood of non-breeding or dispersing owls being present in the action area is unknown, but the effects are not likely to disturb owls in a manner that would affect their survivorship or their health.

#### APACHE TROUT

The overall effect of the proposed action, if successful, would be beneficial to the survival and recovery of the Apache trout. However, some adverse effects may occur due to certain characteristics of the sites selected and to ongoing and foreseeable future Forest activities. Since the introduction of Apache trout, effects of salvage of pure Apache trout currently in the stream systems, renovation of streams, and effects of reintroduction on released Apache trout are covered under a 10(A)(1)(a) permit, and ongoing Forest management should be addressed in separate consultations; this analysis only addresses barrier construction and maintenance effects to Apache trout.

Activities associated with the backfilling of barriers in the East and West fork Little Colorado River drainages and West Fork Black River could affect Apache trout. Backfilling with large volumes of material will result in trampling and compaction of banks, disturbance to the stream bottom, and damage to streamside riparian due to increased trailing adjacent to the barrier sites

and increased trailing across the streams. There could also be an increase in sediment due to construction activities at the barriers. Direct mortality of Apache trout may result from the input of backfill materials into the streams and from trailing across the drainages.

The possibility of other trout species entering these streams is also of great concern. If trout other than Apache trout are observed in these stream reaches, the fish will be removed and the situation evaluated to determine future action.

Barrier-created pools, along with the opportunity to fish for the native Apache trout, could cause an increase in the current level of recreational use on project streams. If this occurs, alterations in aquatic and streamside parameters, along with disturbance to wildlife, could increase. However, some stream reaches are already receiving heavy recreation-use levels. Streams not now heavily used by recreationalists are not likely to see an increase in use because of their relatively isolated locations and limited access. The effects of an increase in recreational use in these stream areas are likely to be small.

#### LOACH MINNOW

Although loach minnow are not present in any of the streams within the proposed action area, critical habitat does occur in the action area. Critical habitat occurs within the West Fork Black River from its confluence with the East Fork Black River upstream to the confluence of Hayground Creek. Loach minnow are known to occur in the East Fork of the Black River outside of the action area. These fish are not likely to migrate to the West Fork or mainstem Black River during the proposed action.

The West Fork Black River barrier is located within loach minnow critical habitat. Activities associated with the backfilling of the barrier will affect loach minnow critical habitat. Backfilling with large volumes of material will result in trampling and compaction of banks, disturbance to the stream bottom, and damage to streamside riparian areas due to increased trailing adjacent to the barrier site and increased trailing across the stream. The primary constituent element of critical habitat that will be effected by the proposed action is the need for low amounts of fine sediment and substrate embeddedness. This constituent element may be adversely affected by temporary increases in sedimentation resulting from these activities.

#### LITTLE COLORADO SPINEDACE

Activities associated with barrier construction and maintenance, which primarily includes work within the stream channel (both equipment and personnel) and trailing across the stream, could result in impacts to Little Colorado spinedace downstream through increases in sedimentation. It is over 5 miles from the proposed action to known occupied Little Colorado spinedace habitat. According to the EA, the total amount of sediment that could be produced and displaced downstream from construction of both the upper and lower South Fork Little Colorado River fish

barriers is less than one cubic yard of predominately fine materials (sand, silt, and clay) (USFS 2002a). However, since spinedace do occur in the action area downstream of the project and, under unusually high flow conditions, some sediment from the project could be transported that far, the spinedace could be affected. This would be a short-term affect and would likely have only a minor effect on spinedace and its habitat.

#### CHIRICAHUA LEOPARD FROG

Chiricahua leopard frogs have been found within the Black River watershed. The action area has not been surveyed for frogs but suitable habitat exists and the species reasonably certain to be present. The Forest will be surveying suitable habitat before work begins.

The proposed action should have little long-term effect on aquatic habitats and minimal impacts on riparian vegetation. Activities associated with the backfilling of barriers at the West Fork Black River could affect Chiricahua leopard frogs. Backfilling with large volumes of material will result in trampling and compaction of banks, disturbance to the stream bottom, and damage to streamside riparian vegetation due to increased trailing adjacent to the barrier sites and increased trailing across the streams. Additionally, some riparian areas may become trampled as piscicide applicators move up and down the stream corridor with gear and pack animals. However, these impacts would be small due to limited travel in any given area.

Chiricahua leopard frog tadpoles could be harmed during electroshocking for fish salvaging efforts. Electroshocking is used primarily to electrically immobilize (stun) fish for capture, and this practice can also stun other vertebrates. Spinal injuries due to electroshocking have been demonstrated for brown trout (*Salmo trutta*), longnose suckers (*Catostomus catostomus*), and rainbow trout (Kocovsky *et al.* 1997). Electroshocking activities could impact frogs by causing rigidity and muscle spasms that may result in injury or death. Rigidity from electroshocking can lead to internal injuries, and a reduction in an individual's ability to move could also increase its susceptibility to predation.

The application of antimycin will result in mortality of all fish species left within the proposed project. The removal of non-native fish from these stream systems may, at least temporarily, reduce predation on frogs and tadpoles because these species can eat eggs and tadpoles and reduce frog populations (Sredl and Howland 1994).

Chiricahua leopard frog reproduction at elevations over 5,900 feet generally takes place from June through August, and the time from hatching to metamorphosis may be 8–9 months (Degenhardt *et al.* 1996). The timing of reproduction suggests that frog tadpoles could be present in the water column during the proposed action. Therefore, there is potential for some injury to, or mortality of, the species due to antimycin toxicity. Field studies of antimycin did not detect an effect on leopard frogs and tadpoles at the standard application rate of 10 parts per billion (ppb) used for fish removal (Gilderhus 1969). The proposed application of antimycin may range from 10 to 20 ppb (as indicated by previous renovations). However, some variation

to this application rate will occur in the proposed action as demonstrated by previous renovations done in conjunction with this project. Lab exposure studies have not shown an effect on the northern leopard frog (*Rana pipiens*) at concentrations up to 48 ppb (Lesser 1972 cited in Schnick 1974). Tiger salamanders survived exposure at 80 ppb for 96 hours while bullfrog tadpoles survived 20 ppb, but died when exposed to 40 ppb for 24 hours (Walker *et al.* 1964, cited in Schnick 1974). In a laboratory experiment, leopard frogs showed 50 percent mortality at antimycin concentrations from 48 to 59 ppb (Lesser 1972, cited in Schnick 1974).

Another potential effect of the proposed action is to reduce the abundance of certain groups of aquatic invertebrates. Most studies have found that at proposed levels, antimycin is harmless in the long-term to most aquatic invertebrates found in streams and standing waters (Herr *et al.* 1967, Schnick 1974). Certain invertebrates could possibly be affected at the proposed levels of antimycin application, including *Cladocera* and *Copepoda* (zooplankton), *Amphipoda* (scuds), and certain mayflies and caddisflies, although populations of these taxa are only diminished temporarily (Schnick 1974). Minckley and Milhalick (1981) found that a 10 parts per million antimycin treatment in Arizona reduced benthic invertebrate numbers almost 5-fold, but long-term effects to benthic invertebrates were minimal in respect to numbers, biomass, and diversity. That treatment level is significantly more than the treatment proposed. Therefore, no invertebrate taxa are likely to be eliminated and abundance typically recovers in 1 to 2 years. Aquatic insects comprise an important component of the frog's diet and the adults feed primarily on emerging insects. We anticipate that the number of aquatic insects would most likely recover. Therefore, the reduction in numbers of invertebrates could have an adverse, short-term effect on food availability for the frog. However, the frog's ability to forage and feed on land, where prey availability should persist, should help moderate this adverse effect.

## **CUMMULATIVE 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.

The cumulative effects section has not changed since the April 19, 2002 biological opinion. Refer to the April 2002 opinion for detailed information.

## **CONCLUSION**

The conclusions of this 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 as described in the Environmental Assessment that were incorporated into the project design.

### Mexican Spotted Owl

After reviewing the current status of Mexican spotted owls, the environmental baseline for the action area, the effects of the Apache trout enhancement project, and the cumulative effects, it is our biological opinion that the actions as proposed are not likely to jeopardize the continued existence of the Mexican spotted owl. We present this conclusion for the following reasons:

1. The proposed action will not modify habitat within the PACs or in restricted habitat such that the habitat no longer supports MSO.
2. The nine PACs affected by the proposed action represent a fraction of the 624 known MSO PACs located on Region 3 Forest Service lands in the Upper Gila Mountain Recovery Unit.

### Apache Trout

After reviewing the current status of the Apache trout, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the modified Apache trout reintroduction project, as proposed, is not likely to jeopardize the continued existence of the Apache trout. No critical habitat has been designated for this species, therefore, none will be affected. We present this conclusion for the following reasons:

1. Although the results of this reintroduction effort cannot be predicted with certainty, and the long-term survival of the species in the Black River and the Little Colorado River cannot be guaranteed, this action could establish additional secure, pure, reproductive, self-sustaining populations of Apache trout within its historical habitat.
2. Barrier construction activities will be short-term and will not significantly alter Apache trout habitat.

### Loach Minnow

After reviewing the current status of the loach minnow, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the Apache trout reintroduction project, as proposed, is not likely to jeopardize the continued existence of the loach minnow, or result in the destruction or adverse modification of its critical habitat. We present these conclusions for the following reasons:

1. The proposed action temporarily affects a very small portion of the species' critical habitat within the Black River drainage and does not significantly impact the primary constituent elements.
2. Loach minnows are not known to occur in this area. Therefore, the effects of the proposed action on individuals of the species will be minimal.

### Little Colorado Spinedace

After reviewing the current status of the Little Colorado spinedace, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the Apache trout reintroduction project, as proposed, is not likely to jeopardize the continued existence of the Little Colorado spinedace. Critical habitat for this species has been designated in Nutrioso Creek (Apache County, Arizona), Chevelon Creek (Navajo County, Arizona), and East Clear Creek (Coconino County, Arizona); however, this action does not affect these areas and no destruction or adverse modification of that critical habitat is anticipated. We present these conclusions for the following reasons:

1. The Little Colorado spinedace is found in East Clear Creek and its tributaries (Coconino County), Chevelon and Silver creeks (Navajo County), Nutrioso Creek, and the Little Colorado River (Apache County) in Arizona. The proposed action affects a very small portion of the species' range within the Little Colorado River drainage.
2. The effects will be transitory and are expected to be of short duration.

### Chiricahua Leopard Frog

After reviewing the current status of the Chiricahua leopard frog, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the Apache trout enhancement project, as proposed, is not likely to jeopardize the continued existence of the Chiricahua leopard frog. No critical habitat has been designated for this species, therefore, none will be affected. We present this conclusion for the following reasons:

1. The frog occurs over a large area of southeastern Arizona and southwestern New Mexico. The proposed action affects a very small percentage of the species' range.
2. Electroshocking and antimycin treatment are not likely to directly affect a large number of frogs, tadpoles, and/or eggs.

## **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 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.

The measures described below are non-discretionary, and must be undertaken by the Forest and their applicants so that they become binding conditions of any grant or permit issued to contractors, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest (1) fails to assume and implement the terms and conditions or (2) fails 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, the Forest or applicant must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement. [50 CFR §402.14(i) (3)].

## **AMOUNT OR EXTENT OF TAKE**

### **Mexican Spotted Owl**

The July 2, 2003 biological opinion contained the following incidental take statement:

*This take statement replaces the take statement in the April 19, 2002, biological opinion. Since no barrier construction occurred during 2002 the amount of anticipated take for MSOs has been readjusted to reflect this change. The following take statement is for anticipated take during 2003 and 2004.*

*MSO habitat and designated PACs exist near portions of the project. MSO are known to inhabit five PACs (10101, 10109, 10605, 10612, 10613) in areas where construction of barriers will occur during the breeding season. If MSO were determined to breed in any or all of the five PACs during project construction, we would anticipate take by harassment due to a significant disruption of normal behavior patterns, including those associated with breeding. Such disruption could result in loss of reproduction. We anticipate that take is reasonably certain to occur in five PACs for two years as a result of this proposed action. Therefore, up to 10 breeding efforts may be disrupted over two years.*

The following revised take statement applies to all Mexican spotted owls within the action area.

For the purpose of evaluating incidental take of MSO from the action under consultation, incidental take can be anticipated as either the direct mortality of individual birds, or direct disturbance, or the alteration of habitat that affects behavior (i.e. breeding or foraging) of birds to such a degree that the birds are considered lost as viable members of the population and thus “taken.” They may fail to breed, fail to successfully rear young, raise less fit young, or desert the area because of disturbance or because habitat no longer meets the owl’s needs.

Using available information as summarized within this document, we have identified conditions of possible incidental take for the MSO associated with implementation of the Apache trout enhancement project. Based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished by the Forest Service, take is anticipated for the MSO as a result of predicted noise disturbance during the breeding season due to barrier construction in the Greer (#10605), East Fork Little Colorado River (#10612), and West Fork Little Colorado River (#10613) PACs. Additionally, disturbances due to walk-through activities will disturb the Hoodoo Knoll (#10101), Fish Creek (#10102), Conklin Creek (#10103), Upper Conklin Creek (#10104), Slaughter Draw (#10105), Middle Turkey Spring (#10118), Hagen Creek (#10135), Double Cienega (#10136), Conklin Crossing (#10152), Turkey Track (#10156), South Fork (#10604), Greer (#10605), West Fork (#10607), East Fork Little Colorado River (#10612), and West Fork Little Colorado River (#10613) PACs during the breeding season. Though we believe that the Forest Service has proposed conservation measures that will minimize adverse effects to MSO within these PACs, the proposed action is not consistent with the Recovery Plan or the 1996 Forest Plan Amendments to avoid construction or otherwise encourage additional disturbance within designated MSO PACs.

The following table outlines the type of anticipated take for each PAC and the estimated year that take will occur.

PAC Number	Name	Type of Anticipated Take	Estimated Year
10101	Hoodoo Knoll	Anticipated take covered in the July 2, 2003 biological opinion. <ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Barrier work was completed in 2003 <sup>1</sup> .  Renovation 2004
10102	Fish Creek	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2004
10103	Conklin Creek	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2005
10104	Upper Conklin Creek	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2005

<b>PAC Number</b>	<b>Name</b>	<b>Type of Anticipated Take</b>	<b>Estimated Year</b>
10105	Slaughter	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2004
10109	Wildcat Point	Anticipated take covered in the July 2, 2003 biological opinion.	Barrier work was completed in 2003.
10118	Middle Turkey Springs	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2004
10135	Hagen Creek	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2004
10136	Double Cienega	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2004
10152	Conklin Crossing	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2005
10156	Turkey Track	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2005
10604	South Fork	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation 2006
10605	Greer	<ul style="list-style-type: none"> <li>• Short term disturbance<sup>3</sup> that disrupts or is likely to disrupt owl behavior</li> <li>• Harassment through noise disturbance resulting from fish renovation and barrier construction in and around PAC</li> </ul>	Barrier Work: 2004 Renovation: 2006
10607	West Fork	<ul style="list-style-type: none"> <li>• Single disturbance<sup>2</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>• Harassment through noise disturbance resulting from fish renovation in and around PAC</li> </ul>	Renovation: 2007

PAC Number	Name	Type of Anticipated Take	Estimated Year
10612	EFLCR	<ul style="list-style-type: none"> <li>Short term disturbance<sup>3</sup> that disrupts or is likely to disrupt owl behavior.</li> <li>Harassment through noise disturbance resulting from fish renovation and barrier construction in and around PAC</li> </ul>	Barrier Work: 2004 and 2005 Renovation: 2004 and 2005
10613	WFLCR	<ul style="list-style-type: none"> <li>Short term disturbance<sup>3</sup> that disrupts or is likely to disrupt owl behavior</li> <li>Harassment through noise disturbance resulting from fish renovation and barrier construction in and around PAC</li> </ul>	Barrier Work: 2004 Renovation: 2006

1: Take statement is found at the beginning of the Amount or Extent of Take Section.

2: Single Disturbance: A disturbance that occurs within/over one breeding season.

3: Short-term Disturbance: A disturbance that occurs over 1 to 3 breeding seasons.

We do not believe that take will occur in the following PACs due to breeding season restrictions and location of PACs within the action area.

PAC #	Name
10121	Bear Wallow Schell
10122	Bear Wallow Confluence
10123	Fish Barrier
10130	Snake Creek
10132	Lower Snake Creek
10134	Bear Wallow Trail 62

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

**Apache Trout**

The April 19, 2002 biological opinion contained the following incidental take statement:

*The Service anticipates that after all efforts to salvage Apache trout, 200 Apache trout will be taken during stream renovation to remove non-native salmonid species. This incidental take is expected to be in the form of death caused by the fish toxicant Antimycin-A. In addition, the Service anticipates up to 25% of the total number of released Apache trout will remain in the stream and be taken as a result of this proposed action. This*

*incidental take is expected to be in the form of harassment and/or mortality from handling and from failure to acclimate to a new environment.*

The above take statement anticipates take due to salvage of Apache trout, stream renovation, and reintroduction of Apache trout. Since these actions are covered under Arizona Game and Fish's 10(a)(1)(A) permit, the take statement is replaced with the following:

The FWS anticipates incidental take of Apache trout in the form of killing or harassment will be difficult to observe for the following reasons. Apache trout eggs, fry, and young fish are small, blend into their environment, and occur underwater in a flowing river. Barrier construction will temporarily increase sedimentation, thus creating a turbid river environment making it difficult to see fish. Water flow may move specimens out of the immediate area of detection. Equipment may be used around the stream bank which may further increase sedimentation. We anticipate the extent of incidental take to include fish, fry, and eggs in the action area when construction on barriers occurs. We anticipate the amount of fish taken as a result of barrier construction to be small due to the low numbers of pure Apache trout expected to be present. Construction at the Hayground barrier may result in take of more Apache trout because Hayground Creek contains pure Apache trout populations. Additionally, work associated with barrier construction is a minor disturbance when compared to all activities proposed. Authorized take will be considered to have been exceeded if more than 20 dead fish (any species) are detected during one event within 0.5 mile upstream and 0.5 mile downstream of construction activities at a barrier site and it is reasonably certain that such mortality was caused by the barrier construction.

### **Loach Minnow**

The FWS did not anticipate that the proposed action would result in incidental take of loach minnow based on the lack of any known occurrence of loach minnow within or downstream of the action area in the April 19, 2002 biological opinion.

We do not anticipate that the proposed changes to the action will result in incidental take of loach minnow based on the same reasons.

### **Little Colorado Spinedace**

In the April 19, 2002 biological opinion we did not anticipate that the proposed action would incidentally take any Little Colorado spinedace. We do not anticipate that the proposed changes will result in incidental take of Little Colorado spinedace.

### **Chiricahua Leopard Frog**

The frog is known to occur within the watershed. Surveys have not been completed to document where the Chiricahua leopard frog populations occur within the action area. Some incidental take of frogs and tadpoles due to mortality, harm, and/or harassment from antimycin treatment and electroshocking is anticipated to occur. Because the status of the species could change over time through immigration, emigration, and loss or creation of habitats, the exact level of take

resulting from this action cannot be precisely quantified. We anticipate that all frogs, tadpoles, and eggs present will be taken by the proposed project due to application of antimycin, electroshocking, or salvage as described in the terms and conditions of this incidental take statement. We anticipate that frogs, tadpoles, and eggs taken during the salvage operation will be harassed, but not likely killed as they would be if they remained in the stream. This will be a short-term disturbance. Frogs and tadpoles taken due to the application of antimycin and electroshocking may be harmed and or killed due to the proposed action. However, we do not anticipate that many frogs will be killed due the terms and conditions proposed in this biological opinion.

### **EFFECT OF TAKE**

In this biological opinion the FWS determined that this level of anticipated take is not likely to result in jeopardy to the Mexican spotted owl, Apache trout, or Chiricahua leopard frog.

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

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent measures below and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

#### **Mexican Spotted Owl**

Reasonable and Prudent Measure # 1:

The Forest shall monitor incidental take resulting from the proposed action and report the findings of that monitoring to the FWS.

The following terms and conditions implement reasonable and prudent measure #1 for MSO PACs (10605, 10612, and 10613) along the Little Colorado River:

- 1.1 The Forest shall monitor the project areas where construction of barriers in PACs takes place in order to ascertain effects on individual MSOs. This monitoring will be accomplished using the following protocol during the years of construction of barriers in PACs:
  - 1.1.1 One survey in March and one survey in April with at least three weeks separating surveys.
  - 1.1.2 Two surveys in May with at least two weeks separating the surveys.
  - 1.1.3 A total of two more surveys during the months of June, July, or August with at least four weeks separating surveys.

- 1.1.4 If, at any time, the Forest finds a MSO, the Forest shall cease surveys and coordinate with us to develop measures needed to minimize take of MSOs.

The following terms and conditions implement reasonable and prudent measure #1 for MSO PACs (10101 and 10109) within the Black River watershed:

- 1.2 The Forest shall maintain records of when project activities occur at each barrier. This will help determine if crews were within PACs during the breeding season.
- 1.3 The Forest shall immediately notify AESO if a MSO is located within a PAC during project activities.

The following terms and conditions implement reasonable and prudent measure #1 for all five MSO PACs (10605, 10612, 10613 on the Little Colorado River and 10101 and 10109 on the Black River watershed).

- 1.4 After every season, the Forest shall submit a report to the Arizona Ecological Services Field Office within 90 days of monitoring and activities within PACs. The report shall include results of MSO surveys and implementation of other terms and conditions herein, as well as any observations of MSO or notes about the effects of the action. The report shall also summarize the implementation of the proposed action.

Reasonable and Prudent Measure #2:

Personnel education/information programs and well-defined operational procedures shall be implemented.

The following terms and conditions implement reasonable and prudent measure #2 for all five MSO PACs:

- 2.1 All field personnel who implement any portion of the proposed action shall be informed of regulations and protective measures for the MSO. Training shall include Forest Service best management practices, known information about listed species (MSO) habitat, MSO PACs, and information concerning the Act. In particular, emphasis should be placed on the importance of minimizing noise disturbance of MSOs during the breeding season.
- 2.2 The Forest shall ensure the project monitor(s) and/or supervisor, upon being informed of a MSO location within the project area, immediately notifies (by telephone, electronic transmission, or facsimile) either of the persons listed in the closing paragraph of this biological opinion.

### Reasonable and Prudent Measure #3

The Forest shall minimize adverse effects of barrier construction and all associated activities.

The following terms and conditions implement reasonable and prudent measure #3 for all five MSO PACs:

- 3.1 Work conducted in association with barrier construction and maintenance shall only occur between the hours of 0600 to 1800 hours in areas adjacent to or within 1/4 mi of PACs along the Black River system during the breeding season.
- 3.2 Travel to and from the barrier sites shall occur along routes that will have the least impact to MSO habitat. Travel corridors/routes used that enter PACs should be obliterated following this project. This will discourage new user trails from being created within PACs or old trails re-opened permanently that would introduce a long-term disturbance (i.e., OHV use within the PAC) from the proposed action.

### Apache Trout

#### Reasonable and Prudent Measure #1:

The Forest shall monitor incidental take resulting from the proposed action and report to the Arizona Ecological Services Field Office the findings of that monitoring.

- 1.1 The Forest shall submit an annual report to this office each year until construction activities are completed within and immediately adjacent to the river corridor. This report shall include monitoring results for Apache trout discovered at the construction site, a description and explanation of any project mitigation measures which were not implemented or which had a result not otherwise expected, and complete and accurate records of any incidental take that occurred during the course of the project.
- 1.2 This office shall be notified immediately (602-242-0210) if more than 20 dead fish of any species are detected during any one event within 0.5 miles upstream and 0.5 miles downstream of construction activities at any barrier site. Any construction actions that may be contributing significant amounts of sediment must be stopped.
- 1.3 The Forest shall submit annual monitoring reports to the AESO by December 31, beginning in the year in which the Apache Trout Reintroduction Project begins. These reports shall briefly document the previous calendar year's effectiveness of the terms and conditions, the locations of listed species observed, and, if any are found dead, the suspected cause of mortality. The report shall also summarize tasks accomplished under the proposed minimization measures and terms and conditions.



**Reasonable and Prudent Measure #2:**

The Forest shall insure the security of the introduced population by maintaining the effectiveness of the barriers.

- 2.1 Physical barriers installed to protect Apache trout habitat shall be annually inspected and maintained as needed for ten years.

**Chiricahua Leopard Frog****Reasonable and Prudent Measure #1:**

The Forest shall take measures to minimize impacts to frogs, tadpoles, and egg masses in the action area by removing and holding as many individuals as can be detected by qualified surveyors until stream conditions have returned to normal.

- 1.1 The Forest shall work with Arizona Game and Fish Department to collect eggs, tadpoles, and frogs found during surveys of suitable habitat.
- 1.2 Tadpoles will be collected using dip nets and/or seines. Use protocols developed for handling and care of ranid frogs for the Ramsey Canyon leopard frogs.
- 1.3 If egg masses are present, care shall be taken to minimize impacts to the eggs. Use protocols developed for handling and care of ranid frogs for the Ramsey Canyon leopard frogs.
- 1.4 All held specimens will be returned to the site(s) of collection as soon as possible after the areas return to an acceptable condition.
- 1.5 Provide a report on the results of surveying for and holding frogs, tadpoles, and/or eggs to AESFO by December 1 of the year in which the activities occurred.

Review requirement: 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 Forest must immediately provide an explanation of the causes of the taking and review with the AESO the need for possible modification of the reasonable and prudent measures.

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

Upon locating a dead, injured, or sick listed species, initial notification must be made to the FWS'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 care 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.

#### Mexican spotted owls

1. To the extent possible, the Forest should consider scheduling construction after the incubation period in active PACs (late March - early May).
2. To the extent possible, the Forest should consider monitoring the PACs along the Black River watershed to determine breeding status and location of owls within the PACs.

#### Chiricahua Leopard Frog

1. The Forest should regularly inventory and survey all potential habitats on the Forest for frogs.
2. The Forest should take actions to improve aquatic habitats for the Chiricahua leopard frog on the Forest.

### **REINITIATION NOTICE**

This concludes formal consultation on the action outlined in your 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.

The FWS appreciates the Forest Service's efforts to identify and minimize effects to listed species from this project. For further information please contact Jennifer Graves (x232) or Debra Bills (x239). Please refer to the consultation number, 02-21-01-F-0101, in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)  
Field Supervisor, Fish and Wildlife Service, Albuquerque, NM  
Leslie Ruiz, Pinetop Fishery Resource Office, Pinetop, AZ  
District Ranger, Springerville Ranger District, Springerville, AZ  
District Ranger, Alpine Ranger District, Alpine, AZ  
Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

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**APPENDICES**

## **Appendix A: Conference for Mexican Spotted Owl Proposed Critical Habitat**

On November 18, 2003 the U.S. Fish and Wildlife Service re-opened the proposed rule for the designation of MSO critical habitat. The majority of the proposed actions, including the modifications, are within the boundary of proposed MSO critical habitat. However, proposed critical habitat is limited to areas with the boundary that meet the definition of protected and restricted habitat as described in the Recovery Plan. The action area contains portions of twenty-two PACs. All PACs are within proposed MSO critical habitat. In addition, the action area contains restricted habitat.

The primary constituent elements essential to the conservation of the MSO include those physical and biological features that support nesting, roosting, and foraging. The primary constituent elements for Mexican spotted owl were determined from studies of their habitat requirements and the information provided in the Recovery Plan (USFWS 1995 and references therein). Since owl habitat can include both canyon and forested areas, primary constituent elements were identified in each area.

The primary constituent elements that occur in mixed conifer, pine-oak, and riparian forest types, as described in the Recovery Plan, have the following attributes:

- High basal area of large diameter trees;
- Moderate to high canopy closures;
- Wide range of tree sizes suggestive of uneven-age stands;
- Multi-layered canopy with large overstory trees of various species;
- High snag basal area;
- High volumes of fallen trees and other woody debris;
- High plan species richness, including hardwoods;
- Adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of Mexican spotted owl prey species.

For canyon habitat, the primary constituent elements include the following:

- Cooler and often more humid conditions than the surrounding area;
- Clumps or stringers of trees and/or canyon wall containing crevices, ledges, or caves;
- High percent of ground litter and woody debris;
- Riparian or woody vegetation (although not at all sites).



The five barrier construction sites and back-fill option may require the removal of up to an estimated eight trees per site. The size of trees removed will vary but are expected to be less than 12 inches dbh. A few additional trees may die as a result of expected pooling behind the barriers. The direct impacts to proposed MSO critical habitat physical structure, vegetation removal and flooding, is expected to total less than 5 acres.

We concur with the Forest's determination that the proposed action may affect, but will not likely adversely affect, MSO critical habitat. We base this determination on the following:

1. Any habitat alteration within designated critical habitat will be insignificant and discountable.
2. Trees that will be cut within critical habitat will meet the recommendations in the Recovery Plan for managing restricted habitat. Ponderosa pine trees greater than 18 inches DBH and Gambel oak will not be cut.
3. The amount of trees that may be removed would not be significant to change the constituent elements in the area.

**APPENDIX B**  
**Tables**

**Table 1:** Schedule of activities in the Apache Trout Enhancement Project by project type.

<b>Water System</b>	<b>Barrier Activities</b>	<b>Stream Renovation</b>
<b>BLACK RIVER WATERSHED</b>		
Bear Wallow Creek	N/A	Completed 2003
Centerfire Creek (Including Boggy and Wildcat Creeks)	Completed 2003	2007
Conklin Creek	N/A	2005
Fish Creek	Completed 2003	2004
Hayground Creek	2004	2004
Snake Creek	N/A	Completed 2003
Stinky Creek	N/A	2005
West Fork Black River		
Between Barriers		2004
Lower	2006	2007
<b>LITTLE COLORADO RIVER WATERSHED</b>		
East Fork Little Colorado River		
Lower	2004	2005
Upper	2004	2004
Lee Valley Creek	N/A	Completed 2003
South Fork Little Colorado River		
Lower	2004	2006
Upper	2004	2006
West Fork Little Colorado River		
Lower	2004	2006
Upper	2004	2006

**Table 2:** Volume of backfill associated with each barrier site. These volumes are the minimum amounts necessary to ensure the integrity of the structures and the maximum amounts necessary to ensure that no water is stored as a result of the structures.

<b>Barrier</b>	<b>Backfill Amount</b>
West Fork Black River	15 – 2500 cubic yards
East Fork Little Colorado River	
Upper Barrier	4 – 45 cubic yards
Lower Barrier	<b>6-275 cubic yards</b>
South Fork Little Colorado River	
Upper Barrier	4 – 155 cubic yards
Lower Barrier	7 – 168 cubic yards
West Fork Little Colorado River	
Upper Barrier	4 – 80 cubic yards
Lower Barrier	7 – 800 cubic yards

**Table 3:** Relationship of the proposed actions to Mexican spotted owl Protected Activity Centers (PACs) and suitable habitat.

Project Site	Within 1/4 mile of Barrier		Walk-through <sup>1</sup> within 1/4 mile of:		Affected PACs (ID#)
	PAC	Unsurveyed suitable habitat <sup>2</sup>	PAC	Unsurveyed suitable habitat	
<b>Black River System</b>					
Bear Wallow <sup>3</sup>	n/a <sup>4</sup>	n/a	Yes	Yes	21,22,23,34
Boggy	n/a	n/a	No	Yes	None
Centerfire	Yes	No	n/a	n/a	09
Conklin	n/a	n/a	Yes	No	010103, 04, 52, 56
Corduroy	n/a	n/a	Yes	Yes	35
Double Cienega	n/a	n/a	Yes	Yes	05, 35, 36
Fish	Yes (a)	No	Yes (b)	Yes	(a):01,09; (b): 01, 02, 05, 18
Hayground	No	No	No	Yes	None
Snake	n/a	n/a	Yes	No	32, 30
Stinky	n/a	n/a	Yes	Yes	07
West Fork Black River	No	No	No	Yes	None
Wildcat	Yes	Yes	Yes	Yes	09
<b>Little Colorado System</b>					
East Fork Little Colorado <sup>5</sup>	Yes (a)	No	Yes (b)	No	(a&b): 12
South Fork Little Colorado <sup>6</sup>	No	No	Yes	Yes	04
West Fork Little Colorado	Yes	No	Yes	No	05, 13

1 Includes activities associated with fish salvage, antimycin application, fish-kill monitoring, fish stocking

2 Includes mixed conifer not in PACs that have not been surveyed within the last 2 years

3 Includes South Fork Bear Wallow

4 Not applicable to this project site; described activity will not occur

5 Includes Lee Valley

6 Includes Bill Riley and Joe Baca Draw

**Table 4:** Summary of recent spotted owl monitoring and survey efforts along the South, East, and West Forks of the Little Colorado River.

PAC No.	1998	1999	2000	2001
04 South Fork Little Colorado River (SFLCR)	Pair present; Roost site 1 mile from SFLCR, over 1 mile from upper barrier	No Monitoring	No owls detected during survey of SFLCR from ½ mile upstream of upper barrier to ½ mile downstream of lower barrier	No owls detected during survey of SFLCR from ½ mile upstream of upper barrier to ½ mile downstream of lower barrier
05 West Fork Little Colorado River above Greer (WFLCR)	Pair confirmed	Male and female found in several locations along slope within ¼ mile of lower barrier of WFLCR	Roost found near top of slope about ¼ mile from lower barrier on WFLCR	No owls detected during 4 surveys
12 East Fork Little Colorado River (EFLCR)	Roost site and 1 young owl near bottom of drainage, 0.2 mi downstream of proposed lower barrier on EFLCR	No owls found in 2 surveys of 1999 roost site	Pair detected on slope about 0.8 mi downstream of lower barrier on EFLCR	Pair and roost tree found on mid-slope about 0.1 mile from lower barrier on EFLCR
13 West Fork Little Colorado River (WFLCR)	Pair detected throughout PAC on slopes along WFLCR	Nest found near bottom of drainage between upper and lower barriers, about 0.7 mi from each, along WFLCR	Pair located within 100 yards of 1999 nest	No owls detected during 4 surveys

**Table 5:** PACs that contain areas where walk-through activities will occur as part of the proposed project.

<b>PAC Number</b>	<b>Name</b>	<b>Activity</b>	<b>Activity within 1,320 ft of Nest Site</b>	<b>Associated Stream System</b>	<b>Walk-through Type Activities Anticipated During Breeding Season</b>
10101	Hoodoo Knoll	1	Nest Site Unknown	Fish Creek	Yes
10102	Fish Creek	1	Nest Site Unknown	Fish Creek	Yes
10103	Conklin Creek	1	Nest Site Unknown	Conklin Creek	Yes
10104	Upper Conklin Creek	1	Nest Site Unknown	Conklin Creek	Yes
10105	Slaughter Draw	1	Nest Site Unknown	Fish Creek	No
10109	Wildcat Point	2	Nest Site Unknown	Fish Creek	No
10118	Middle Turkey Spring	1	Nest Site Unknown	Fish Creek	No
10121	Bear Wallow Schell	1	Nest Site Unknown	Bear Wallow	No
10122	Bear Wallow Confluence	1	Nest Site Unknown	Bear Wallow	No
10123	Fish Barrier	1	Nest Site Unknown	Bear Wallow	No
10130	Snake Creek	1		Snake Creek	No
10132	Lower Snake Creek	1	Nest Site Unknown	Snake Creek	No
10134	Bear Wallow Trail 62	2	Nest Site Unknown	Bear Wallow	No
10135	Hagen Creek	1	Nest Site Unknown	Fish Creek	No
10136	Double Cienega	1	Nest Site Unknown	Fish Creek	No
10152	Conklin Crossing	1	Nest Site Unknown	Conklin Creek	Yes
10156	Turkey Track	1	Nest Site Unknown	Conklin Creek	Yes
10604	South Fork	1	Nest Site Unknown	South Fork LCR	Yes
10605	Greer	1 and 3	Yes	West Fork LCR	Yes
10607	West Fork	1	Nest Site Unknown	West Fork Black River	Yes
10612	EFLCR	1 and 3	Yes	East Fork LCR	Yes
10613	WFLCR	1 and 3	Yes	West Fork LCR	Yes

1: Walkthrough activities associated with stream renovation and fish stocking

2: Activities within ¼ mile of PAC boundary

3: Barrier Activity within the PAC.

**Table 6:** A summary of key protocol features for each stream scheduled for renovation. Included are the tentative renovation date, approximate stream length, estimated number of persons needed to accomplish renovation, and estimated number of days required to accomplish renovation.

Stream	Date m/y	Length Miles	Personnel	Days
Bear Wallow Creek <sup>1</sup>	10/03	12.9	8-10	5
Centerfire Complex	09/07	29.1	Up to 20	6
Conklin	06/05	8.6	8-12	4
East Fork LCR – Upper	06/04 <sup>2</sup>	4.5	8-12	5
East Fork LCR – Lower	06/05	4.9	8-12	5
Fish Creek <sup>3</sup>	06/04	24.5	Up to 20	6
Hayground	10/04 <sup>2</sup>	5.4	8-12	5
Lee Valley Creek <sup>4</sup>	06/03 <sup>2</sup>	4.2	8-10	5
Snake Creek	09/03	6.2	8-12	5
South Fork LCR <sup>5</sup>	06/06 <sup>2</sup>	18.3	8-10	5
Stinky Creek	06/05	3.2	8-10	5
West Fork Black River <sup>6</sup>	06/07 <sup>2</sup>	15.6	8-10	5
West Fork LCR	06/06 <sup>2</sup>	12.2	8-10	5

- 1: Includes North and South Forks Bear Wallow Creek.
- 2: Dates dependant on completion of new barrier construction.
- 3: Includes Double Cienega and Corduroy Creeks, and Ackre Lake.
- 4: Includes Colter Reservoir, does not include Lee Valley Reservoir.
- 5: Includes Bill Riley Creek and Joe Baca Draw.
- 6: Includes approximately 1.1 miles of Home Creek below barrier



**APPENDIX C**  
**Figures**

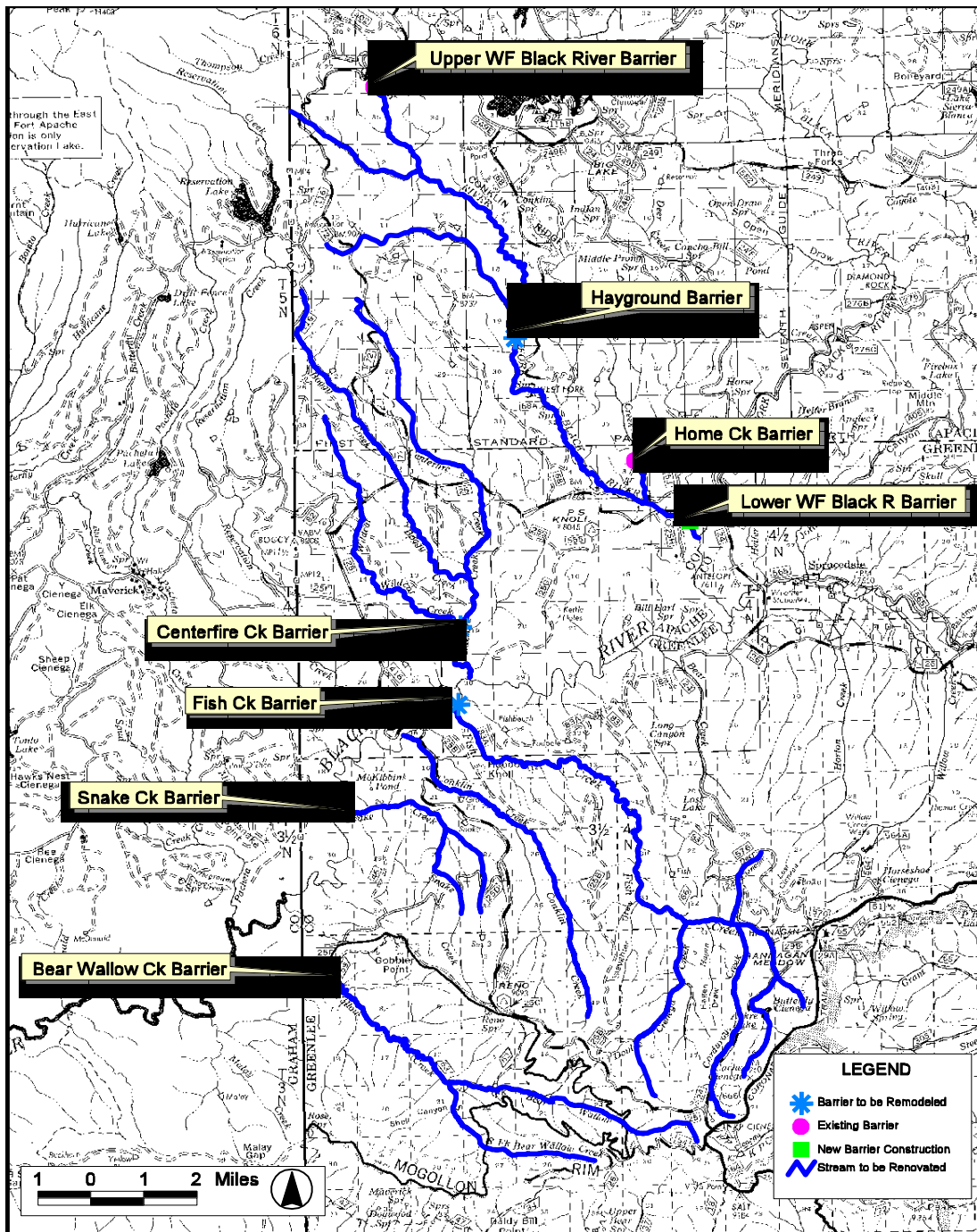


FIGURE 1. PROPOSED Apache trout enhancement project locations within the Black River system on the A-SNFs. Stream renovation (removal of non-native salmonids species above barriers) under ALTERNATIVES 2 and 4 would be accomplished by the use of Fintrol® (antimycin A) with neutralization by potassium permanganate (KMnO<sub>4</sub>), and under ALTERNATIVE 3, renovation would be accomplished by electrofishing techniques.

**Appendix D: Formal Apache trout consultations to date**

<b>Consultation Number</b>	<b>Date</b>	<b>Name</b>	<b>Anticipated Incidental Take</b>
2-21-90-F-222	November 7, 1990	Pinaleno Mountains Recreation Projects	Yes, 2 Apache trout per year
2-21-91-F-076	December 4, 1992	West Fork Allotment Management Plan	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
2-21-91-F-054	May 7, 1993	Effects to Loach Minnow and Apache Trout from proposed Campbell and Isabelle Timber Sale	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
2-21-90-F-120, 2-21-92-I-666	July 20, 1993	Proposed Burro Creek, Hayground, and Reservation Allotment Management Plan Revision and A Watershed Approach to Coldwater Fisheries West Fork of the Black River	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
2-21-94-F-437	December 22, 1994	The Effects of the Apache Trout Habitat Improvement Project on the Threatened Apache Trout	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
2-21-95-F-0503	October 27, 1995	10-Year term permit for livestock grazing on the Sprucedale-Reno and KP/Raspberry Allotments	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
2-21-92-F-550 and 2-21-96-F-187	December 11, 1998	Arizona Water Quality Standards	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
02-21-90-F-119a	April 17, 2001	Revised Biological Opinion on Transportation and Delivery of Central Arizona Project Water to the Gila River Basin in Arizona and New Mexico and its Potential to Introduce and Spread Nonnative Aquatic Species	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
02-21-02-F-030	April 5, 2002	Mineral Ecosystem Management Area (MEMA) Apache Trout, Apache Sitgreaves National Forest	No
02-21-02-F-101	April 19, 2002	Apache Trout Enhancement	Yes, up to 200 Apache trout killed and 25% of released Apache trout harassed
02-21-03-F-0298, 02-21-03-F-0299, 02-21-02-F-0501	July 8, 2003	Biological Opinion for Allotment Management Plans for the Voight, Greer, and Sheep Springs Allotments	Yes, take anticipated, however, take is not quantifiable so surrogate measures are provided
02-21-97-F-0229	In Consultation	Biological Opinion for Sunrise Park-Big Lake Road - Forest Highway 43	In Consultation

02-21-01-F-101 R2	In Consultation	Apache Trout Enhancement Project – Reinitiation 2	
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