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In Reply Refer To:  
AESO/SE  
22410-2007-F-0365

July 17, 2008

Mr. Alan Quan  
Forest Supervisor  
Prescott National Forest  
344 South Cortez Street  
Prescott, Arizona 86303

RE: Phase II Utility Maintenance in Utility Corridors on Arizona Forests

Dear Mr. Quan:

Thank you for your request for formal consultation and conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was received in our office on March 3, 2008. At issue are impacts that may result from the proposed Phase II Utility Maintenance in Utility Corridors on Arizona Forests located in Apache-Sitgreaves (ASNF), Coconino (CNF), Kaibab (KNF), Prescott (PNF), and Tonto National Forests (TNF), Arizona. The proposed action "may adversely affect" the Mexican spotted owl (*Strix occidentalis lucida*) (MSO), southwestern willow flycatcher (*Empidonax traillii extimus*), loach minnow (*Tiaroga cobitis*) and their designated critical habitat.

We concur with your determinations of "may affect, not likely to adversely affect" for the bald eagle (*Haliaeetus leucocephalus*), lesser long-nosed bat (*Leptonycteris curasoae verbabuenae*), California condor (*Gymnogyps californianus*) (outside of its non-essential experimental boundaries), Chiricahua leopard frog (*Rana chiricahuensis*), Gila topminnow (*Poeciliopsis occidentalis*), Apache trout (*Oncorhynchus apache*); and Gila chub (*Gila intermedia*), Little Colorado spinedace (*Lepidomeda vittata*), razorback sucker (*Xyrauchen texanus*), and spikedace (*Meda fulgida*) and their designated critical habitat. Additionally, you concluded that the proposed action "is not likely to jeopardize" the continued existence of the experimental non-essential populations of Mexican gray wolf (*Canis lupus baileyi*), Colorado pikeminnow (*Ptychocheilus lucius*), and California condor. Our rationales for concurrence are provided at the end of this document (Appendix A).

You requested a conference opinion for the candidate yellow-billed cuckoo (*Coccyzus americanus*), that you determined the proposed project "may adversely affect", but "is not likely to jeopardize." That conference opinion is provided in the body of this biological opinion (BO). For the candidate headwater chub (*Gila nigra*), you made a "is not likely to jeopardize" determination, and we provide our technical assistance at the end of this document (Appendix B).

This BO and conference opinion is based on information provided in the February 29, 2008, Biological Assessment (BA) and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

## TABLE OF CONTENTS

CONSULTATION HISTORY .....	5
DESCRIPTION OF THE PROPOSED ACTION .....	5
Background .....	5
Project Area .....	7
Action Area .....	7
Proposed Action .....	8
Utility Vegetation Management .....	8
Line Maintenance .....	9
Vehicle Travel .....	12
Repair of Access Routes .....	13
Conservation Measures .....	14
STATUS OF THE SPECIES AND CRITICAL HABITAT .....	16
Mexican spotted owl .....	16
Southwestern willow flycatcher .....	19
Yellow-billed cuckoo .....	22
Loach minnow .....	24
ENVIRONMENTAL BASELINE .....	26
Mexican spotted owl .....	26
Southwestern willow flycatcher .....	27
Yellow-billed cuckoo .....	31
Loach minnow .....	33
EFFECTS OF THE ACTION .....	34
Mexican spotted owl .....	35
Southwestern willow flycatcher .....	42
Yellow-billed cuckoo .....	49
Loach minnow .....	51
CUMULATIVE EFFECTS .....	56
Mexican spotted owl .....	56
Southwestern willow flycatcher .....	56
Yellow-billed cuckoo .....	56
Loach minnow .....	57
CONCLUSION .....	57
Mexican spotted owl and critical habitat .....	57
Southwestern willow flycatcher and critical habitat .....	57
Yellow-billed cuckoo .....	58
Loach minnow and its critical habitat .....	59
AMOUNT OR EXTENT OF TAKE .....	60
Mexican spotted owl .....	60
Southwestern willow flycatcher .....	62
Yellow-billed cuckoo .....	63
Loach minnow .....	63
EFFECT OF THE TAKE .....	64
REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS .....	64
Mexican spotted owl .....	64
Southwestern willow flycatcher .....	65
Loach minnow .....	65

CONSERVATION RECOMENDATIONS .....	66
REINITIATION NOTICE .....	67
FIGURES .....	78
APPENDIX A .....	80
APPENDIX B .....	88
APPENDIX C .....	89
APPENDIX D .....	102

## **CONSULTATION HISTORY**

The consultation history shown below begins with the July 10, 2007, meeting with the Forest Service (FS) to discuss the proposed action for the Phase II project. For a complete list of the consultation history prior to July 10, 2007, please refer to the BA.

- July 10, 2007: FWS and FS meet to discuss the proposed action for Phase II.
- October 3, 2007: FWS and FS meet to discuss the draft proposed action for Phase II.
- February 7, 2008: FWS, FS, and utilities meet to discuss draft Phase II BA comments.
- February 15, 2008: FS provided a draft Phase II BA.
- March 3, 2008: We received the final Phase II BA.
- March 6, 2008: FWS re-lists the desert bald eagle as a threatened species, pending a 12-month status review.
- April 16, 2008: FWS provided a draft BO proposed action summary to FS and utilities for review.
- April 29, 2008: We received comments on draft BO proposed action summary.
- May 21, 2008: FS formally provides the bald eagle analysis to the Phase II BA.
- June 5, 2008: FWS provided the draft Phase II BO to FS and utilities for review.
- Mid-June -Early July: Comments received from the FS and utilities, along with a request from the FS to Finalize the BO.

## **DESCRIPTION OF THE PROPOSED ACTION**

The proposed action is the FS authorization for Arizona Public Service (APS), Salt River Project (SRP), Western Area Power Administration (WAPA), Navopache Electric Co-op (NEC), and Garkane Energy to conduct ongoing utility vegetation management, line maintenance, vehicle travel, and repair of access routes along utility corridors within and adjacent to permitted ROWs, in Arizona on NFS land (excluding Coronado NF) in accordance with existing special use permits or easements for the lines. For a complete description of the proposed action, please refer to the February 29, 2008, BA.

### **Background**

Utilities within Arizona have numerous transmission, distribution, and communication lines that cross United States National Forest System (NFS) lands. These utility lines lie within existing rights-of-way (ROW) corridors and are authorized under FS special use permits. As part of the special use permit conditions, the FS authorizes the utility companies to conduct maintenance-related activities within an established ROW. The utility companies are permitted to work

within and outside (for hazard tree removal) the established corridors (or ROW) to maintain their structures and manage vegetation. Utility maintenance that occurs on private land or other non-FS in-holdings is not part of the special use permit or part of this consultation because the FS does not authorize these maintenance activities or have jurisdiction on non-FS lands.

APS, SRP, WAPA, NEC, Garkane Energy, and Qwest have entered into a consultation agreement (see BA, Appendix A) with the FS and FWS in an effort to streamline section 7 consultations for utility actions within and outside of ROW corridors. It should be noted that only Qwest communication lines that are under-built (i.e., included within the APS power line corridors) on APS lines are included in this consultation. The consultation agreement includes two phases.

Consultation for Phase I (Hazard Vegetation Removal in Utility Corridors on Arizona Forests) is complete and a BO was provided to the FS on July 5, 2007 (file number 22410-2007-F-0364). That BO remains in effect until the completion of this Phase II BO. Phase I of the consultation agreement covers removal of all imminent danger, hazard vegetation<sup>1</sup> along utility corridors on all of the NFS lands in Arizona, with the exception of the Coronado NF. The purpose of hazard vegetation removal is twofold: 1) it allows the utility companies to provide uninterrupted service to customers, and 2) it provides protection against wildfires that could result from hazard vegetation coming into contact with power lines.

The purpose of this consultation is the implementation of Phase II, which will cover all utility line maintenance related activities (i.e., hazard vegetation treatments, routine vegetation maintenance, routine and hazard aerial and ground-based utility inspection patrols, maintenance of lines, hardware and structures, and other associated actions) along utility corridors on NFS lands in Arizona for the next 10 years. Failure to address vegetation clearance and fuels hazards could result in wildfires, major power outages, and injury to life or property. Additionally, existing Federal regulations and utility standards require maintenance<sup>2</sup>, and new Federal energy regulations mandate vegetation inspections and treatment to maintain lines in safe and reliable operating conditions (NERC Reliability Standard FAC-003-1). Special use permits for the individual lines may expire and be renewed within the 10-year timeframe of this project. If the special use permit requires the utility to operate or expand their impact area beyond what is considered in this consultation, the FS will review the proposed changes and re-initiate consultation with FWS, as appropriate.

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<sup>1</sup> Hazard Vegetation: Hazard vegetation is a live or dead standing tree or vegetation having defects, singly or combined, in the roots, butt, bole, or limbs, which predispose it to imminent mechanical failure to the whole or part of a utility line, pole, or tower. The tree or vegetation must be located such that a failure of the tree or vegetation (or any part of the tree or vegetation) has a probability of causing damage to the utility line, pole, or tower. A "defect" is an injury or disease that seriously weakens the stems, roots, or branches of the tree or vegetation, predisposing it to fail (e.g., broken branches, split top) to continue standing. "Imminent" implies that damage resulting to the utility line, pole, or tower from the tree or vegetation could occur at any time. This definition applies to any vegetation that poses an immediate threat to a utility line. Hazard vegetation can include vegetation with arc potential (see Arc definition). Trees or vegetation with arc potential may be healthy with no defects predisposing them to imminent mechanical failure, but if vegetation is within arcing potential from a transmission or distribution line, it may pose a hazard. In order to eliminate hazards, pruning or removal of the hazard would be necessary.

Arc: Arc: The flow of electricity across a gap (through the air) from one conductor to another or to a grounded object. Arcing potential is evaluated by using accepted industry standards such as the National Electric Safety Code.

<sup>2</sup> Industry standards, regulations, and recommendations governing maintenance: ANSI A300 Standards for Tree Care Operations: Tree Shrub, and other Woody Plant Maintenance (ANSI A300 Part 1 – 2001; ANSI A300 Part 7 - 2006), ANSI Z133.1 Standard for Tree Care Operations: Pruning, Trimming, Repairing, Maintaining, and Removing Trees and Cutting Brush – Safety Requirements (ANSI 2006), OSHA 1910.269 Regulations for Electric Power Generation, Transmission, and Distribution (29 CFR 1910.269), Pruning Trees Near Electric Utility Lines (Shigo 1990), National Electrical Safety Code (NESC 2007), Rural Utilities Service regulations (USDA 7 CFR Part 1738), Arizona Corporation Commission regulations, and Federal Energy Regulatory Commission (FERC) Mandatory Reliability Standards.

## **Project Area**

The project area for Phase II includes those areas where APS, SRP, Garkane, NEC, and WAPA power lines, both overhead and underground, are present on NFS lands in Arizona (Figure 1). A total of 2,585 miles of power line is within the project area. Of the 2,585 miles, APS has 1,741 miles, SRP has 391 miles, Garkane has 52 miles, NEC has 259 miles, and WAPA has 142 miles of power line. The project area includes a total of 33,346 acres (ac) of power line ROW. Of the 33,345 acres, APS has 20,770 acres, SRP has 6,737 acres, Garkane has 386 acres, NEC has 2,053 acres, and WAPA has 3,399 acres of the project area. The total miles and acres of power line corridor were calculated using the widest possible width that would be treated under the proposed action for utility vegetation management and line maintenance. The width was calculated by compiling various permitted ROW widths for each line voltage (see Table 1, Figure 2) and pulling out the maximum ROW width for that voltage.

Project activities included in the FS authorizations may occur outside of the maximum ROW width (e.g. hazard vegetation work, vehicle travel on access roads, air travel over NFS, and vegetation disposal); these activities are not included in the acreage calculations.

Qwest communication lines included within this consultation are only those communication lines on NFS land that are under-built on APS power lines. Vegetation maintenance along Qwest lines is generally conducted by APS concurrent with APS maintenance activities. Line maintenance activities by Qwest are conducted only in response to emergency situations (i.e. outages and storm events), which are not included within this consultation.

Please refer to the BA for a comprehensive list of each power line within the project area by utility with voltage, starting and ending points, Forest, and line name and/or number.

Line Voltage	Possible ROWs (feet)*
7.5-33 kV	15 to 60
69 kV	30 to 80
115 kV	55 to 100
230 kV	100 to 175
345 kV	150 to 200
500 kV	160 to 275

\* The ROWs in this table are only a demonstration of what may be a typical permitted ROW by line voltage. Permitted ROWs vary within each voltage category, the type of structure, and whether there are parallel lines present.

## **Action Area**

The action area is larger than the footprint of the project area and represents all areas to be affected directly or indirectly by Phase II operations. Effects from the proposed action that extend beyond the project area footprint may also extend to adjacent or nearby non-Federal lands and are included as part of the action area.

The extent of the action area boundary includes all utility line maintenance activities that occur on the permitted ROW, hazard tree removal outside of the permitted ROW, access routes on NFS land, adjacent access routes on non-Federal land that vehicles use to gain access to the

utility lines on NFS land solely to conduct the permitted activity, and airspace used to access and assess utility lines throughout the Coconino, Kaibab, Tonto, Apache-Sitgreaves, and Prescott NFs area in Arizona.

In order to access the ROW corridors to conduct utility line maintenance activities on NFS land, utilities may travel over non-NFS land. Vehicle travel across non-Federal lands that are used solely to access NFS lands where the utility line maintenance activities will occur are considered to be part of the action area because the travel is essential to the FS-authorized activity and therefore also interrelated.

### **Proposed Action**

The following is a general description of the proposed actions implemented by each utility. For a detailed summary of actions implemented by APS, SRP, WAPA, NEC, and Garkane refer to Appendix C (Tables 1 through 5). The utilities have incorporated into the proposed action conservation measures and best management practices to avoid and/or minimize effects to covered species (see Conservation Measures section below). Also the utilities have proposed to monitor implementation of the proposed action and follow a reporting process for the actions below as they are implemented (Appendix D).

### **Utility Vegetation Management**

Routine vegetation maintenance, hazard vegetation treatments, vegetation inspection, and vegetation disposal are four sub-categories described in the BA under utility vegetation management. Utility vegetation management is the process of managing vegetation within and outside of ROWs for the purpose of providing safe, efficient, and reliable delivery of electricity while minimizing vegetation related fires. Each utility vegetation management subcategory is described in more detail below, and the BA provides a general summary of vegetation maintenance activities along with the activity type, duration, frequency, timing, equipment, and crews used.

#### **Routine Vegetation Maintenance**

Routine vegetation maintenance is the process of identifying and pruning or removing vegetation within the ROW for the purpose of providing safe, efficient, and reliable delivery of electricity. Pruning typically only occurs at the edge of ROW corridors or where the national forest identifies resource or species concerns warranting pruning rather than removal of a tree or vegetation. Clearing within the power line ROW occurs on a routine schedule based on the clearance needs for an individual line. Currently, the ROW corridors are in various states of maintenance. Vegetation maintenance on each line is separated into two categories: lines that have been cleared to the recommended clearance standard for that line and that will only require routine follow-up maintenance; and lines that have not been cleared to the clearance standard and require extensive clearing. A list of ROWs that need extensive clearing and routine maintenance can be found in the BA. Routine vegetation maintenance projects are planned through aerial and ground patrols prior to beginning the project. Power lines are cleared on a cyclical basis every 1 to 10 years depending on factors such as vegetation type, the clearance standard, and utility practices.



Routine vegetation maintenance involves two main methods; mechanical (mowing) and manual (hand crew) treatments. Mowing within ROW corridors involves the use of a cutting device mounted on a tractor with rubber tires or tracks that cuts and masticates vegetation. The mower is typically operated by one driver and one grounds-person. The grounds-person directs the mower and may operate a chainsaw to cut trees that the mower is unable to access. A hand crew may also follow after the mower to clean up, scatter debris, and prune or remove trees that the mower could not access. All vegetation masticated by the mower is left on site in the corridor piled no higher than four inches. NEC is the only power utility that does not use a mower or mechanical device for routine vegetation maintenance. A list of distribution lines that are proposed for mechanical treatment can be found in the BA. Hand crew treatment is the method of vegetation control for all distribution lines and transmission lines where mowing is not possible. Hand crew removal and pruning of trees generally involves the use of chainsaw felling and pruning techniques.

### **Hazard Vegetation**

Hazard vegetation operations include using hand crews to remove and/or prune vegetation that poses an immediate threat to a utility line. Because hazard vegetation requires immediate treatment to maintain the line in a safe operating condition, not all species conservation measures to minimize and/or avoid impacts can be reasonably implemented (see BA Table 21, page 66 – 72 and BA Appendix D). Therefore, hazard vegetation can be removed or pruned at any time of year. Although it is impossible to determine exactly where the hazard vegetation will occur, the FS identified areas within the project area that have the highest risk for hazard vegetation based on a number of known factors. Factors such as topography, vegetation type, previous vegetation management projects, drought, and disease were all considered in determining where hazard vegetation may be located. The analysis and hazard ratings for the utility lines are found in the BA.

### **Vegetation Inspection**

Each of the utilities inspects the ROW to identify hazard vegetation and plan the next routine maintenance cycle. Inspections are conducted through scheduled aerial patrols and/or ground patrols. Information from inspections may include planned access routes, data collection, number of crews needed, and a description of treatment methods in order to identify and plan work.

### **Vegetation Disposal**

Vegetation disposal and methods of disposal for a particular power line or project are determined through an agreement with the individual national forest and the utility company. Once the vegetation is cut, the utility will dispose of and/or distribute the slash and logs in a cost effective and efficient manner. The BA provides a list of mechanical and manual disposal methods that may be used by the utilities.

### **Line Maintenance**

Line maintenance involves inspections and patrols to identify problem areas along the lines, structures, and hardware, and the repair and replacement of these problem areas for overhead and underground transmission and distribution lines. Inspections and patrol programs are used to monitor the health of the system and detect problems prior to failure and to detect problem areas requiring attention. Line maintenance inspections and patrols may involve routine aerial and/or

ground patrols, unscheduled inspections to identify hazards, and routine pole inspections and treatments. Defects identified in the patrols and inspections can be categorized as hazardous, which require treatment as soon as possible, or non-hazardous, which are treated according to each utility's priority system. The BA provides a general summary of line maintenance activities along with the activity type, duration, frequency, timing, equipment, and crews used.

## **Overhead Line Maintenance**

### *Aerial Patrols*

APS, Garkane, SRP, and WAPA conduct aerial inspections of their transmission lines. The helicopter flies at or just above conductor height at about 50 to 150 feet above the ground, except where terrain or trees are such that a higher level is required. The low-level flights are intended to get a close look at the power line, structures, and associated equipment to identify areas that may require repair. The helicopter may hover or circle over the lines to get a closer look and sometimes will land. The frequency of hovering and circling varies for each utility. The problems identified during the flight are recorded and scheduled for treatment.

### *Light Detection and Ranging (LIDAR) Flights Description*

In addition to the routine flights, APS will conduct an additional set of flights for a project that will gather aerial photography and LIDAR data along the APS transmission power lines across the entire state.

1. Flights will begin in June, July, or August 2008 and will take up to 18 months to complete for the entire state. A second set of flights may also occur approximately three years later to update the data and would take about nine months to complete. Flights could occur during any time of year for each of these sets of flights.
2. The helicopter would fly about 300 to 1000 feet above ground level (agl) over the power lines, although most of the flights will be conducted about 500 feet agl.
3. The helicopter would make one pass on each transmission line, which means corridors with parallel transmission lines would have double the number of flights over the corridor. It is possible that some lines may need to be re-flown if the data gathered in the first flight are not sufficient. Therefore, the flights for the entire project in 2008 and 2009 would involve one to four passes over the lines. However, most of the transmission lines would only be flown with a single pass.
4. A small (two to four passenger) fixed wing plane will fly a single pass over the lines at about 7,000 feet above ground to take aerial photography images of the transmission corridors.
5. Prior to the flight, the crew may need to place ground control and weather stations on the ground in three locations for a line or close group of lines. The stations are portable and about 5 to 6 feet tall. They sit temporarily on the ground while the flight is conducted for that line, and then are taken off-site once the flight is complete. The stations are placed next to established roads or carried just off to the side of an established road.

6. The follow-up project after approximately three years would be conducted using the same methods as the project in 2008 and 2009, but the helicopters may only fly the portions of the lines that have the densest vegetation surrounding them.
7. For the helicopter flights, refueling may need to be conducted away from an existing airport if the distance between airports is great enough. This would be accomplished by landing the helicopter in a parking lot or other open, previously disturbed area and near a well established road. A tanker truck would travel on a well established road to meet the helicopter for refueling. At this time, we do not know the specific locations for refueling, but APS will not conduct this activity within 0.25 mile of any Mexican spotted owl (MSO) protected activity center (PAC), southwestern willow flycatcher occupied habitat, stream or pond occupied with threatened or endangered fish and/or amphibians, or yellow-billed cuckoo occupied habitat during these species' breeding seasons. Also, helicopters will not refuel within 0.25 mile of streams or ponds with threatened or endangered fish/amphibians.

#### Ground Patrols

Each of the utilities conducts ground patrols on their transmission and distribution lines routinely, but the frequency and purpose of the patrols vary for each utility. The patrols are typically conducted by one or two utility employees driving a pickup truck or snow cat or traveling on foot. They document problem areas for future repair. These employees sometimes conduct minor repairs during the patrol. An exception to this type of ground patrol would be the APS climbing inspection where the patrol and repairs are conducted at the same time. The utilities also typically do additional unscheduled hazard patrols year-round to identify hazards on a utility structure, line, or equipment.

#### Routine (Wood) Pole Inspection

The utilities that have wood pole construction on their transmission lines (APS, Garkane, NEC, and SRP) conduct routine pole inspections to test the poles for structural problems. The timing and frequency of these inspections varies by each utility. The inspection may be accomplished with treatments. Pole treatments involve chemical application onto or within the pole to seal the pole or treat internal decay and insects.

The inspectors drive or walk into the corridors. The inspector compiles a report detailing the problem areas and recommendations for fixing the problem. Recommendations may include applying chemical treatment, replacing the pole, or adding steel support rings to the pole. The problems are categorized as hazardous or non-hazardous and treated according to the utilities' priority schedules.

#### Repair and Replacement Work

Once problem areas are identified, the work is prioritized to address hazardous problems immediately and non-hazardous problems according to the schedule described by each utility and considering timing of actions to avoid and/or minimize species impacts. Hazardous and non-hazardous line maintenance work involves the same types of work; only the timeframe and urgency of the work differs. Because hazardous line problems require immediate repair, not all species conservation measures to minimize and/or avoid impacts can be reasonably implemented (see BA Table 21, page 66 – 72, and Appendix D). The life span for much of the power line

equipment ranges from 30 to 60 years. However, repair or replacement of the equipment may be needed at any time, and the frequency of the work is difficult to predict.

Pole replacement involves a large hole digger truck to drive in the ROW and dig a hole 20 to 36 inches wide and 5 to 15 feet deep near the existing pole; then the old pole is cut off at ground level and taken off-site. The pole is set using the hole digger truck or a boom truck. If access does not allow for the vehicle to enter the ROW, crews will walk in with a hand rock drill and air compressor to dig the hole. Pole replacement may involve a single pole or small group of poles, or multiple poles along a longer section of a line (up to the entire length of the line). Pole replacement along a long section of line is infrequent and occurs approximately every 30 to 60 years for a particular line.

The type of vehicles that may be used during the maintenance work include a pickup truck, all-terrain vehicle (ATV), bucket truck, crane, backhoe, boom truck, caterpillar, hole digger truck (for replacing wood poles), snowcat (for high elevation snow conditions), cable puller truck, and various trailer attachments with equipment. Large semi-trucks may also be used on major established roads to haul in equipment. Some of the utilities may use helicopters to transport crews and equipment (e.g. replacement parts, conductor wire, etc.) into an area (this method would not be used by NEC). The utilities seldom use helicopters to transport crews and equipment into an area (APS = 1-2 times per year, SRP = average of 1-2 times per year, WAPA= 1 time per year, Garkane = 1 time per every 5 years).

The utilities (SRP, WAPA, and APS) may conduct erosion control work surrounding transmission line steel towers if erosion has occurred around the footers or pole. If erosion control around the footers or the poles is needed, the work would involve a bulldozer or backhoe entering the area and fixing the eroded area. If a bulldozer or backhoe cannot access the area, work is done by hand. Erosion control is rarely needed.

### **Underground Line Maintenance**

Underground line maintenance activities involve routine patrols and repair and replacement of switching cabinets, transformers, and underground cable. The switching cabinets and transformers are above ground. Problem areas identified in the patrols are documented and a crew is dispatched according to the urgency of the problem.

Repair and replacement work on underground lines involves trenching around the cable to splice a section or replace the entire cable, and repairing or replacing hardware for switching cabinets and transformers. The lifespan of underground cable is about 30 years but is replaced or repaired as needed. All vehicle travel to underground cable work occurs on existing access routes and within the permitted ROW for the cable. Access routes within the ROW may require vegetation removal work for replacement of underground cable if vehicle access requires vegetation removal. This vegetation work would be conducted within the ROW using the same methods as described above under Utility Vegetation Management to prune or remove the vegetation.

### **Vehicle Travel**

In most cases, the power lines in the action area have roads that approach and/or follow along or within the ROW. Roads authorized for use by the special use permit for the ROW or by the appropriate national forest are referred to as "FS authorized roads" in the BA. Utility vehicles

may travel on or off-road within the utility ROW, but do not typically travel off-road outside of the ROW. Roads administered by the FS as well as county, state, and Federal highways that are located on FS lands are referred to as “classified”. Classified roads occur outside of the ROW corridors. If a classified road does not provide access to an area for which utility maintenance is required, travel is often done on foot. Below lists the types of roads that are used to access a power line corridor:

1. Approaching the ROW, truck travel is limited to classified roads. Within the ROW, truck travel may occur on authorized roads and off-road.
2. Approaching the ROW, ATV use is limited to either classified roads or trails designated for off-road use. Within the ROW, ATVs may use authorized roads and trails or off-road travel.
3. Foot travel may occur on NFS trails and within the power line ROW.

In some limited circumstances where no existing route is available to gain safe and reasonable ROW access to conduct the proposed action and where vehicles are necessary to accomplish the inspection, treatment, or repair, the utilities may drive off-road outside the ROW. The utilities minimize off-road access to the maximum extent practicable to both reduce resource impacts and equipment damage (i.e., the utilities use existing routes wherever and whenever possible). Off-road travel outside of the ROW is anticipated to occur infrequently over all of the utilities’ transmission and distribution lines, and vehicles travel for very short distances between existing routes and the ROWs. Only rubber tired vehicles travel off-road and there will be no off road travel through wetlands or streams. In addition, the conservation measures described for “Repair of Access Routes” would be implemented (as well as all other species-specific conservation measures).

### **Repair of Access Routes**

In some instances to provide safe and reasonable access to the ROW corridor, the utilities must repair or conduct minor road maintenance. All activities will be coordinated with the appropriate FS District. The frequency of these activities is rare, and thus would be expected to occur extremely infrequently within sensitive species habitats. The activities may include:

- Removing and replacing (following maintenance work completion) traffic control structures/barriers (e.g., signs, dips, berms, large boulders).
- Grading/smoothing ruts in existing routes.
- Repairing minor erosion to allow safe vehicle access.
- Removing displaced rocks, fallen trees and other displaced objects from access routes in order to provide safe access.
- Trimming minor amounts of vegetation (alive or dead) or removing small trees or vegetation (<9 inches dbh) from access routes.

Possible equipment used to repair or provide reasonable route access includes hand equipment, backhoes, graders, and small dozers.

### **Conservation Measures**

The implementation of specific conservation measures provided in the list below varies among components of the proposed action (routine maintenance, hazard treatments, and inspection patrols) and among utilities. The detailed list of which measures apply to which utility action is provided in the BA (Table 21, pages 66 – 72 and Appendix D).

#### **Mexican Spotted Owl**

1. Avoid ground work (use of equipment) within PACs between March 1 and August 31.
2. Avoid use of loud machinery within 0.25 mile of PACs between March 1 and August 31, with goal to limit noise levels at PAC boundary to < 56 decibels (dBA).
3. For hazard line maintenance and/or vegetation hazard treatment in an MSO PAC during the breeding season, coordinate the timing of the hazard treatments such that work is consolidated into the least number of days of work and least number of trips in and out of the PAC to minimize the duration and frequency of disturbance to the MSO as much as possible.
4. Coordinate disposal methods with District and if appropriate/feasible leave large (> 12 inches) logs at edge of ROW in or adjacent to PACs.
5. When feasible schedule hazard line maintenance and vegetation treatments after breeding season (i.e., defer activity to later date when low priority or not imminent threat to safe operation of lines/structures).
6. For APS LIDAR flights, APS will not land for refueling or stage the helicopter within 0.25 mile of an MSO PAC during the breeding season.

#### **Southwestern Willow Flycatcher**

1. Avoid non-hazardous ground work disturbance in the floodplain containing occupied breeding habitat between May 1 and August 30 (September 15<sup>th</sup> for high elevation breeding sites – near Alpine).
2. For the SRP PN-145 distribution line within the conservation storage space of Roosevelt Lake, SRP vegetation line clearing and maintenance supervisors will coordinate activities with SRP's Roosevelt Lake Habitat Conservation Plan program manager to minimize species habitat impacts. Specifically, when feasible, routine maintenance activities will be scheduled in years (fall, winter, or early spring) when willow flycatchers have low probability of using the habitat in the right-of-way corridor during the upcoming breeding seasons based on lake level projections, habitat modeling information, and known bird distribution.
3. For APS LIDAR flights, APS will not land for refueling or stage the helicopter within 0.25 mile of southwestern willow flycatcher occupied habitat during the breeding season.

**Yellow-billed Cuckoo**

1. Avoid ground work disturbance in the floodplain containing occupied breeding habitat between June 1 and August 30.
2. For APS LIDAR flights, APS will not land for refueling or stage the helicopter within 0.25 mile of yellow-billed cuckoo occupied habitat during the breeding season.

**Loach Minnow**

1. Routine vegetation ground patrols shall be done in conjunction with line patrols to reduce the number of times NEC crews travel across Campbell Blue Creek and Blue River.
2. The timing of NEC crews pruning or removing trees will be coordinated such that the work will be consolidated with other work or work will be consolidated in such a way requiring the least number of low water crossings across Campbell Blue Creek and Blue River.
3. When possible, crews will walk over low water crossings rather than drive if the distance to the vegetation or line maintenance treatment is close enough that operations would not be greatly hindered.
4. Transport of crew members shall occur in the least number of vehicles possible just as long as the safety of crew members is not compromised.
5. As long as the safety of crew members is not compromised, the FS shall require NEC to slow their vehicle speed to the extent that wakes/waves are minimized when NEC vehicles cross Campbell Blue Creek and the Blue River.
6. For APS LIDAR flights, APS will not land for refueling or stage the helicopter within 0.25 mile of loach minnow occupied habitat.

**General Noxious Weed Best Management Practices to minimize impact to T&E Species**

1. Ensure that utility mower, track, or other off-road equipment, which has high potential to carry noxious weeds (not including service vehicles, pick-up trucks, or passenger cars) is free of soil, weeds, vegetative matter or other debris that could harbor seeds prior to entering national forests.
2. Utilities will contact the appropriate FS District to identify known or high probability noxious weed hotspots. In those areas, the utilities will ensure that mower, track, or other off-road equipment, which has high potential to carry noxious weeds (not including service vehicles, pick-up trucks, or passenger cars) are free of soil, weeds, vegetative matter or other debris that could harbor seeds prior to moving equipment between line segments.

**Repair of Access Route Best Management Practices**

1. When feasible, safe, and efficient to conduct maintenance work or inspections, walk into areas that are inaccessible under current route conditions.
2. If traffic control structures are present (boulders, barriers, dips) and must be moved, return structures and configuration to original position/design when work is complete.
3. Prune vegetation where feasible, and minimize the amount of vegetation trimmed along access route.
4. Minimize soil disturbance to reduce erosion.
5. Minimize rutting and repair per coordination with appropriate FS District.
6. Staging areas for loading and unloading of equipment should be located in previously disturbed areas, but outside of floodplains and other wet areas.

**STATUS OF THE SPECIES AND CRITICAL HABITAT****Mexican spotted owl**

The MSO was listed as a threatened species in 1993 (USDI 1993). The primary threats to the species were cited as even-aged timber harvest and stand-replacing wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The Fish and Wildlife Service appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USDI 1995).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) and in the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. Although the MSO's entire range covers a broad area of the southwestern United States and Mexico, the MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

The United States range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The primary administrator of lands supporting the MSO in the United States is the Forest Service. Most owls have been found within Forest Service Region 3 (including 11 national forests in Arizona and New Mexico). Forest Service Regions 2 and 4 (including two national forests in Colorado and three in Utah) support fewer owls. According to the Recovery Plan, 91 percent of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the Forest Service.

A reliable estimate of the numbers of owls throughout its entire range is not currently available (USDI 1995) and the quality and quantity of information regarding numbers of MSO vary by



source. USFWS (1991) reported a total of 2,160 owls throughout the United States. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico. However, Ganey *et al.* (2000) estimates approximately  $2,950 \pm 1,067$  (SE) MSOs in the Upper Gila Mountains RU alone. The Forest Service Region 3 most recently reported a total of approximately 1,025 PACs established on NFS lands in Arizona and New Mexico (B. Barrera, FS Southwest Region, pers. comm. June 18, 2007). These data are the most current compiled information available to us; however, survey efforts in areas other than NFS lands have resulted in additional sites being located in all Recovery Units.

Researchers studied MSO population dynamics on one study site in Arizona ( $n = 63$  territories) and one study site in New Mexico ( $n = 47$  territories) from 1991 through 2002. The Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations," (*in press*) found that reproduction varied greatly over time, while survival varied little. The estimates of the population rate of change ( $\Lambda = \text{Lamda}$ ) indicated that the Arizona population was stable (mean  $\Lambda$  from 1993 to 2000 = 0.995; 95 percent Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6 percent (mean  $\Lambda$  from 1993 to 2000 = 0.937; 95 percent Confidence Interval = 0.895, 0.979). The study concludes that spotted owl populations could experience great (>20 percent) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to the high annual variation in recruitment, the MSO is then likely very vulnerable to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

Since the owl was listed, we have completed or have in draft form a total of 195 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 390 PACs. The form of this incidental take is almost entirely harm or harassment, rather than direct mortality. These consultations have primarily dealt with actions proposed by FS Region 3. However, in addition to actions proposed by FS 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 two of these projects (release of site-specific owl location information and existing forest plans) have resulted in biological opinions that the proposed action would likely jeopardize the continued existence of the MSO. The jeopardy opinion issued for existing Forest Plans on November 25, 1997, was rendered moot as a non-jeopardy/no adverse modification BO was issued the same day.

In 1996, we issued a biological opinion on FS Region 3 adoption of the Recovery Plan recommendations through an amendment to their Land and Resource Management Plans (LRMPs). 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. In addition, on January 17, 2003, 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. Consultation on individual actions under these biological opinions resulted in the harm and harassment of approximately 243 PACs on Region 3 NFS lands. FS Region 3 reinitiated

consultation on the LRMPs on April 8, 2004. On June 10, 2005, the FWS issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, take is reasonably certain to occur to an additional 10 percent of the known PACs on NFS lands. We expect that continued operation under the plans will result in harm to 49 PACs and harassment to another 49 PACs. To date, consultation on individual actions under the amended Forest Plans, as accounted for under the June 10, 2005, biological opinion has resulted in the incidental take of owls associated with 23 PACs. Incidental take associated with Forest Service fire suppression actions, which was not included in the LRMP proposed action, has resulted in the incidental take of owls associated with 12 PACs.

### **Critical habitat**

The final MSO critical habitat rule (USDI 2004) designated approximately 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (USDI 2004). Within this larger area, critical habitat is limited to areas that meet the definition of protected and restricted habitat, as described in the Recovery Plan. Protected habitat includes all known owl sites and all areas within mixed conifer or pine-oak habitat with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years. Restricted habitat includes mixed conifer forest, pine-oak forest, and riparian areas outside of protected habitat.

The primary constituent elements for proposed MSO critical habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (USDI 1995). Since owl habitat can include both canyon and forested areas, primary constituent elements were identified in both areas. The primary constituent elements which occur for the MSO within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the MSO's habitat needs for nesting, roosting, foraging, and dispersing are in areas defined by the following features for forest structure and prey species habitat:

Primary constituent elements related to forest structure include:

- A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with diameter-at-breast height (dbh) of 12 inches or more;
- A shade canopy created by the tree branches covering 40 percent or more of the ground; and,
- Large, dead trees (snags) with a dbh of at least 12 inches.

Primary constituent elements related to the maintenance of adequate prey species include:

- High volumes of fallen trees and other woody debris;
- A wide range of tree and plant species, including hardwoods; and
- Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

The forest habitat attributes listed above usually are present with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest-type productivity, and plant succession. These characteristics may also be observed in younger stands, especially when the stands contain remnant large trees or patches of large trees. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist.

### **Southwestern willow flycatcher**

#### **Description**

The southwestern willow flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy “fitz-bew” or a “fit-a-bew”, the call is a repeated “whitt”. It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

#### **Listing and critical habitat**

The southwestern willow flycatcher was listed as endangered, without critical habitat on February 27, 1995 (USFWS 1995). Critical habitat was later designated on July 22, 1997 (USFWS 1997a). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (USFWS 1997b).

On May 11, 2001, the 10<sup>th</sup> circuit court of appeals set aside designated critical habitat in those states under the 10<sup>th</sup> circuit’s jurisdiction (New Mexico). The FWS decided to set aside critical habitat designated for the southwestern willow flycatcher in all other states (California and Arizona) until it could re-assess the economic analysis.

On October 19, 2005, the FWS re-designated critical habitat for the southwestern willow flycatcher (USFWS 2005). A total of 737 river miles across southern California, Arizona, New Mexico, southern Nevada, and southern Utah were included in the final designation. The lateral extent of critical habitat includes areas within the 100-year floodplain.

The southwestern willow flycatcher recovery plan (USWS 2002) describes reasons for endangerment, flycatcher status, addresses recovery actions, includes detailed issue papers, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit established throughout the subspecies range and establishing long-term conservation plans.

#### **Habitat**

The southwestern willow flycatcher breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the southwestern willow flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964,

Hubbard 1987, Unitt 1987, San Diego Natural History Museum 1995). Currently, southwestern willow flycatchers primarily use Geyer willow (*Salix geyeriana*), coyote willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolius*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.* 1997).

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in Arizona and other parts of the bird's range. In 2001 in Arizona, 323 of the 404 (80 percent) known flycatcher nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (USFWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Sogge *et al.* 2005).

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod *et al.* 2005, Cardinal and Paxton 2005). That same habitat may subsequently grow or cycle into habitat used for nest placement. Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

### **Rangewide distribution and abundance**

There are currently 275 known southwestern willow flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado (all sites from 1993 to 2005 where a territorial flycatcher has been detected) holding an estimated 1,214 territories (Durst *et al.* 2006). It is difficult to arrive at a grand total of flycatcher territories since not all sites are surveyed annually. Numbers have increased since the bird was listed and some habitat remains unsurveyed; however, after nearly a decade of intense surveys, the existing numbers are just past the upper end of Unitt's (1987) estimate of 20 years ago (500-1000 pairs). About 50 percent of the 1,214 territories (Table 2) currently estimated throughout the subspecies range are located at four general locations (Cliff/Gila Valley – New Mexico, Roosevelt Lake - Arizona, San Pedro River/Gila River confluence – Arizona, Middle Rio Grande, New Mexico).

Table 2. Estimated rangewide population for the southwestern willow flycatcher based on 1993 to 2005 survey data for Arizona, California, Colorado, New Mexico, Nevada, Utah, and Texas <sup>1</sup> .				
State	Number of sites with WIFL territories 1993-05 <sup>2</sup>	Percentage of sites with WIFL territories 1993-05	Number of territories <sup>3</sup>	Percentage of total territories
Arizona	117	42.5 %	495	40.8 %
California	94	34.2 %	191	15.7 %
Colorado	10	3.6 %	63	5.2 %
Nevada	13	4.7 %	68	5.6 %
New Mexico	38	13.8 %	393	32.4 %
Utah	3	1.1 %	4	0.3%
Texas	?	?	?	?
Total	275	100 %	1,214	100 %

<sup>1</sup>Durst *et al.* 2006.  
<sup>2</sup>Site boundaries are not defined uniformly throughout the bird's range.  
<sup>3</sup>Total territory numbers recorded are based upon the most recent year's survey information from that site between 1993 and 2005.

### Arizona distribution and abundance

While numbers have significantly increased in Arizona (145 to 495 territories from 1996 to 2005) (English *et al.* 2006), overall distribution of flycatchers throughout the state has not changed much. Currently, population stability in Arizona is believed to be largely dependent on the presence of two large populations (Roosevelt Lake and San Pedro/Gila River confluence). Therefore, the result of catastrophic events or losses of significant populations either in size or location could greatly change the status and survival of the bird. Conversely, expansion into new habitats or discovery of other populations would improve the known stability and status of the flycatcher.

### **Critical habitat**

The primary constituent elements of critical habitat are based on riparian plant species, structure and quality of habitat and insects for prey. A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (USFWS 2005). The primary constituent elements are:

1. Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:
  - a. Trees and shrubs that include, but are not limited to, willow species, box elder, tamarisk, Russian olive, cottonwood, stinging nettle, alder, ash, poison hemlock, blackberry, oak, rose, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut.

- b. Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 to 30 meters (6 to 98 feet). Lower-stature thickets (2 to 4 meters or 6 to 13 feet tall) are found at higher elevation riparian forests, and tall-stature thickets are found at middle- and lower-elevation riparian forests;
  - c. Areas of dense riparian foliage at least from the ground level up to approximately 4 meters (13 feet) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy;
  - d. Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (i.e., a tree or shrub canopy with densities ranging from 50 percent to 100 percent); or
  - e. Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 hectare (0.25 acre) or as large as 70 hectare (175 acre).
2. A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees; dragonflies; flies; true bugs; beetles; butterflies/moths and caterpillars; and spittlebugs.

A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (USFWS 2005).

### **Past consultations**

Since listing in 1995, at least 159 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the flycatcher's range. A list of these activities can be found in the administrative record for this consultation. Many activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.).

### **Yellow-billed cuckoo**

#### **Description**

Yellow-billed cuckoos are a neotropical migrant, wintering primarily in South America and breeding primarily in the United States (but also in southern Canada and northern Mexico). As a migrant it is rarely detected but can occur outside of riparian areas. Yellow-billed cuckoos begin migration to Arizona during mid-May to mid-June and breed during mid-June to the end of August with the peak of breeding about June 15 to August 15. Clutch size for cuckoos is usually two to three eggs, and development of the young is rapid, with a breeding cycle of 17 days from egg-laying to fledging of young. Although cuckoos usually raise their own young, they are facultative brood parasites, occasionally laying eggs in the nests of other yellow-billed cuckoos or other bird species (USFWS 2005b).

**Listing and critical habitat**

Yellow-billed cuckoos are included in the candidate list as distinct population segment across the western United States (USFWS 2000), but are not presently listed as threatened or endangered, and as a result, there is no designated critical habitat.

**Habitat**

In the arid Southwest, yellow-billed cuckoos are primarily restricted to densely wooded rivers and streams and damp thickets with relatively high humidity. In Arizona, cuckoos are found nesting statewide below 7000 feet in elevation, but are mostly found below 5000 feet in central, western, and southeastern Arizona. Nesting cuckoos are associated with streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees (Corman and Wise-Gervais 2005).

**Rangewide distribution and abundance**

Historically, western cuckoos were found from southern British Columbia through the states of Washington, Oregon, California, and eastward to the Rocky Mountains. They were considered locally common and widespread in Arizona and California; locally common but restricted to a few river reaches in New Mexico; common locally in Oregon and Washington, and local and uncommon in arid and semiarid portions of scattered drainages in western Colorado, western Wyoming, Idaho, Nevada, and Utah, and probably uncommon and local in British Columbia (USFWS 2005a).

Since 1980, records for this species from New Mexico, Arizona, and California indicate an overall estimated 52 percent decline, with numbers too low to establish trends from Idaho, Montana, Utah, Nevada, and Colorado (USFWS 2005a). In addition to the species' absence or rarity in Washington, Oregon, Idaho, Colorado, and Nevada, distribution and abundance have declined in each of the three states with current cuckoo populations (Arizona, New Mexico, and California) (USFWS 2005b).

**Arizona distribution and abundance**

In Arizona, cuckoos have been found in the following drainages: Agua Fria River, Altar Valley, Arivaca Creek, Babocomari River, Big Sandy River, Bill Williams River, Blue River, Burro Creek, Cherry Creek, Cienega Creek, Colorado River, Eagle Creek, Gila River, Hassayampa River, Little Ash Creek, Little Colorado River, Oak Creek, Pinal Creek, Salt River, San Francisco River, San Pedro River, Santa Cruz River, Sonoita Creek, Santa Maria River, Sycamore Canyon, Tonto Creek, Verde River, Virgin River, West Clear Creek, Wet Beaver Creek. These streams and rivers include portions of the ASNF, CNF, Coronado National Forest, PNF, and TNF.

Arizona probably contains the largest remaining known cuckoo population among states west of the Rocky Mountains. AGFD surveyed habitats throughout Arizona in 1998 and 1999 (Corman and Magill 2000) finding 182 cuckoos on 14 drainages in 1998 and 425 cuckoos on 20 drainages in 1999.

**Threats**

Threats to the distribution and population of the cuckoo can be attributed primarily to habitat loss, modification, and fragmentation (Franzreb 1987, Laymon and Halterman 1989, Hughes 1999); decreased water tables (Phillips *et al.* 1964); and possibly the use of pesticides (Gaines and Laymon 1984, Laymon and Halterman 1986, Rosenberg *et al.* 1991, Hughes 1999). However, the primary cause for the cuckoos decline is the extensive loss of its riparian forest habitat throughout the west (USFWS 2000). Knopf *et al.* (1988) and Catron *et al.* (2000) suggest about 90 percent of the riparian habitat in the west has been lost to urban and agricultural development, improper livestock grazing, and water impoundments (USFWS 2005b).

**Loach minnow**

Loach minnow (*Tiaroga cobitis*) was listed as a threatened species on October 28, 1986 (USFWS 1986), and critical habitat was finalized March 21, 2007 (USFWS 2007). Loach minnow is a small, slender, elongate fish with markedly upwardly-directed eyes (Minckley 1973). Historical range of loach minnow included the basins of the Verde, Salt, San Pedro, San Francisco, and Gila rivers (Minckley 1973, Sublette *et al.* 1990). During the last century, both the distribution and abundance of the loach minnow have been greatly reduced throughout the species' range (Propst *et al.* 1988). Competition and predation by non-native fish and habitat destruction have reduced the historical range of the loach minnow by about 85 percent (Miller 1961, Hendrickson and Minckley 1984, Williams *et al.* 1985, Marsh *et al.* 1989, USFWS 1986, 1994). Loach minnow remains in limited portions of the upper Gila, San Francisco, Blue, Black, Tularosa, and White rivers, and Aravaipa, Turkey, Deer, Eagle, Campbell Blue, Dry Blue, Pace, Frieborn, Negrito, Whitewater and Coyote creeks in Arizona and New Mexico (Barber and Minckley 1966, Silvey and Thompson 1978, Propst *et al.* 1985, Propst *et al.* 1988, Marsh *et al.* 1990, Bagley *et al.* 1995, USBLM 1995, Bagley *et al.* 1996). The species was reintroduced into Fossil Creek, tributary to the Verde River on the Tonto National Forest, and Redfield and Hot Springs Canyon in 2007.

Loach minnow is a bottom-dwelling inhabitant of shallow, swift water over gravel, cobble, and rubble substrates (Rinne 1989, Propst and Bestgen 1991). Loach minnow uses the spaces between, and in the lee of, larger substrate for resting and spawning (Propst *et al.* 1988, Rinne 1989). It is rare or absent from habitats where fine sediments fill the interstitial spaces (Propst and Bestgen 1991). Loach minnow feed exclusively on aquatic insects (Schrieber 1978, Abarca 1987). Loach minnow live between two and three years with reproduction occurring primarily in the second summer of life (Minckley 1973, Sublette *et al.* 1990). Spawning occurs in March through May (Britt 1982, Propst *et al.* 1988); however, under certain circumstances loach minnow also spawn in the autumn (Vives and Minckley 1990). The eggs of loach minnow are attached to the underside of a rock that forms the roof of a small cavity in the substrate on the downstream side. Limited data indicate that the male loach minnow may guard the nest during incubation (Propst *et al.* 1988, Vives and Minckley 1990).

**Critical habitat**

Critical habitat for loach minnow includes approximately 522 river miles in Arizona and New Mexico, organized into four complexes. The four complexes are: the Black River complex in Apache and Greenlee counties, Arizona; the Middle Gila/Lower San Pedro/Aravaipa Creek River complex in Pinal and Graham counties, Arizona; the San Francisco and Blue Rivers



complex in Pinal and Graham counties, Arizona, and Catron County, New Mexico; and the Upper Gila River Complex in Catron, Grant, and Hidalgo counties, New Mexico.

The critical habitat designation listed primary constituent elements that are essential for the conservation of loach minnow. The primary constituent elements are summarized below:

1. Permanent, flowing, water with low levels of pollutants.
2. Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.
3. Streams that have low gradients, water temperatures between 35-85° Fahrenheit, pool, riffle, run, and backwater components, and an abundant aquatic insect food base.
4. Habitat devoid of nonnative fish species detrimental to loach minnow or habitat in which detrimental nonnative fish species are at levels which allow persistence of loach minnow.
5. Areas within perennial, interrupted stream courses which are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

The appropriate and desirable level of these factors may vary seasonally and is highly influenced by site-specific circumstances. Therefore, assessment of the presence/absence, level, or value of the constituent elements must include consideration of the season of concern and the characteristics of the specific location. The constituent elements are not independent of each other and must be assessed holistically, as a functioning system, rather than individually. In addition, the constituent elements need to be assessed in relation to larger habitat factors, such as watershed, floodplain, and streambank conditions, stream channel geomorphology, riparian vegetation, hydrologic patterns, and overall aquatic faunal community structure.

The status of loach minnow is declining rangewide. Both historical and present landscapes surrounding loach minnow habitats have been impacted to varying degrees by domestic livestock grazing, mining, agriculture, timber harvest, recreation, development, or impoundments (Hendrickson and Minckley 1984, Belsky *et al.* 1999). These activities degrade loach minnow habitats by altering flow regimes, increasing watershed and channel erosion and thus sedimentation, and adding contaminants to streams and rivers (Belsky *et al.* 1999). As a result, these activities may affect loach minnow through direct mortality, interference with reproduction, and reduction of invertebrate food supplies.

Loach minnow currently exist in approximately 419 miles of streams, which represents only 15 to 20 percent of their historical range. In occupied areas, loach minnow may be common to very rare. Loach minnow are common only in Aravaipa Creek and the Blue River in Arizona, and limited portions of the San Francisco, upper Gila, and Tularosa rivers in New Mexico (USFWS 2000). Information on the 2007 stocking in Fossil Creek, Redfield and Hot Springs Canyon is

not yet available. Although it is currently listed as threatened, the FWS has found that a petition to uplist the species to endangered status is warranted. A reclassification proposal is pending; however, work on it is precluded due to work on other higher priority listing actions (USFWS 1994).

### **Past Consultations**

Our information indicates that 33 formal consultations have been completed for actions affecting the loach minnow. Adverse effects to loach minnow have occurred due to these projects and many of these consultations have required reasonable and prudent measures to minimize effects to species. Only one of these projects (USDA Forest Service Application of Fire Retardants on National Forest System Lands) resulted in a biological opinion that the proposed action would likely jeopardize the continued existence of the loach minnow. Overall, the species is still declining. Additional reintroduction alternatives are being investigated.

### **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.

### **Mexican spotted owl**

MSO habitat within the action area consists predominately of ponderosa pine/Gambel oak and mixed conifer forest, and is located within all five national forests included in this consultation.

There are approximately 88 PACs within the action area and approximately 7,336 acres of protected steep-slope and restricted habitat. Of the 88 PACs present, 56 PACs occur in areas likely to receive vegetation treatment and 16 of those are the focus of this consultation (see BA Table 26). Table 23 in the BA lists the MSO PACs, acres of MSO habitat and acres of critical habitat within the action area by utility line name/number, Forest, and utility. PACs that occur within the action area were determined by overlaying a map of all of the utility lines with a map of established PACs. A 0.25 mile buffer was then placed around the utility line corridor and any PAC that occurred within this buffer was included in the analysis. We do not know whether a nest core has been determined for these PACs, or, if a nest core exists, where it is located within the PAC. However, information for one PAC on Coconino National Forest (Aqueduct PAC, #040734) that is bisected by a distribution line has been studied in detail and was part of a prior APS vegetation clearing consultation (file number 02-21-02-F-0197 R1). The line occurs on top of a ridge dominated by pure ponderosa pine, and the habitat within the ROW was found not to contain suitable MSO nesting or roosting habitat (*Id.*). All designated PACs are located within the Upper Gila Mountains and Basin and Range West RU. Where this project overlays the Colorado Plateau RU, there are no designated PACs. Through the analysis for the Phase I Hazard Vegetation Removal in Utility Corridors on Arizona Forests BO (file number 22410-2007-F-0364) we identified 16 MSO PACs that were most likely to be impacted by hazard vegetation removal due to current forest conditions along the utility corridors. The greatest

potential for adverse effects to MSO from the proposed action is also likely to occur to owls associated with these 16 PACs.

Critical habitat for the action area was determined by overlaying the utility line corridor map on the designated critical habitat map. The actual estimate of critical habitat was then narrowed to areas that met the definition of protected or restricted habitat (USDI 2004). The BA (see Table 32) states that there are approximately 3,914 acres of critical habitat within the action area.

Historical and current anthropogenic uses of MSO habitat include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing is prevalent throughout Region 3 NFS lands and has the potential to negatively affect the availability of grass cover for prey species. Recreation impacts are increasing on all NFs, especially in meadow and riparian areas. The Forest Service states in the BAE for the Buck Springs Range Allotment (file number 02-21-01-F-0425) that owl survey crews reported that owls in the Rock Crossing PAC (#040712), which is located in a heavily used recreation area, are much more erratic in their movement patterns and behavior than other owls. Recreation has been shown to affect MSO (Swarthout and Steidl 2001). With increased recreation across the Forest, there may be other PACs adversely affected by recreationists. Fuels reduction treatments, though critical to reducing the risk of wildfire, can have short-term adverse effects to MSO through habitat modification and disturbance. Accumulating effects related to population growth, especially in Arizona, have resulted in small communities within and adjacent to NFS lands are being developed. This trend may have detrimental effects to MSO by further fragmenting habitat and increasing disturbance during the breeding season. Furthermore, West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona (along with New Mexico, and Colorado) and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney *et al.* 2004). Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona. Uncharacteristic, severe, stand-replacing wildfire is probably the greatest threat to MSO within the action area. As throughout the West, fire severity and size have been increasing within this geographic area.

### **Southwestern willow flycatcher**

Throughout all NFs where the species occurs, actions on and off the Forests have contributed to the decline in flycatcher habitat conditions. Actions such as water diversion, groundwater pumping, habitat clearing, flood control, urban/agricultural development, livestock over grazing, dam building, and dam operations, have changed surface and subsurface stream flows and have altered the quality, distribution, abundance, and longevity of riparian vegetation (USFWS 2002).

Riparian habitats by nature are dynamic, with their distribution in time and space governed mostly by flood events and flow patterns. Current conditions along southwestern rivers and streams throughout much of the Forests are such that normal flow patterns have been modified,

flood events are more catastrophic as a result of degraded watershed conditions, stream channels are degraded, floodplains and riparian communities are reduced in extent, wildfires in riparian habitats are increasing, and the plant species composition in riparian communities are modified with exotic plant species. Habitat loss and fragmentation can lead to increased brood parasitism and nest predation. These conditions have significantly diminished the potential for southwestern rivers and streams to develop suitable nesting habitat for the southwestern willow flycatcher and for those habitats to remain intact and productive for nesting flycatchers (USFWS 2002).

Protective measures and management of various land uses have been implemented at known locations within the action area by the Forest and non-Federal partners to maintain and/or improve habitat conditions and in other instances actions are taken to prevent, reduce, minimize, and/or mitigate for potential adverse effects to the flycatcher. For example, at Roosevelt Lake on the TNF, vehicle entry is prevented into key habitat areas to reduce the likelihood of disturbance to flycatchers and alteration of habitat through off-road vehicle use and/or accidental fires. SRP is also implementing a habitat conservation plan through section 10 of the Act for the operation of Roosevelt Dam.

We evaluated Phase I operations for the southwestern willow flycatcher, which included treating hazard vegetation throughout the five NFs involved in this consultation (file number 22410-2007-F-0364). Our conclusion was that there would be some adverse effects to designated southwestern willow flycatcher critical habitat and as a result, to the species as a whole due the loss of that vegetation. But, the impacts of the project would not lead to incidental take of individual flycatchers, adverse modification of critical habitat, or lead to jeopardy. The Forest (USFS 2008) recently submitted a BA for emergency actions occurring prior to Phase 1 activities and are seeking a concurrence for the determination that the actions were “not likely to adversely affect” the flycatcher and its designated critical habitat.

Throughout the action area, there are streams where flycatcher breeding habitat exists, and other areas where its breeding status is unknown. The areas where birds could be nesting or are most likely to be nesting and where there is a need for utility line maintenance, occur on the TNF (Verde and Salt rivers, Tonto and Cherry creeks), the ASNF (Little Colorado, East Fork Little Colorado, West Fork Little Colorado, Blue, and San Francisco rivers, and Chevelon Creek), and small portions of the PNF and CNFs (Verde River) (Table 3). The general Roosevelt Lake/Tonto Creek/Salt River population on the TNF has been the densest location of nesting flycatchers in Arizona and, and times has also been the densest throughout the birds’ range, with nearly 200 flycatcher territories.

Migratory southwestern willow flycatchers can also be found in the action area during the months of April/May and August/September, using areas temporarily for shelter and foraging. Migratory birds are typically found in riparian areas, but the quality of habitat they use can vary. As a result, they can be found in a much broader habitat quality and in more unpredictable locations.

A variety of methods were used to help determine where flycatchers are and may be found breeding within the action area (BA). Known nest locations were plotted from past site-specific surveys and a habitat suitability model (Dockens *et al.* 2004) that predicts the likelihood of occupancy was queried. Some follow-up site-visits occurred to evaluate results from the model

(BA). On the TNF and in proximity to areas where utility line maintenance may be required, southwestern willow flycatchers are known to nest within the conservation space at Roosevelt Lake (Salt River and Tonto Creek arms), and on main stem Tonto Creek. These population numbers and breeding locations will fluctuate due to the changing water level of Roosevelt Lake. On the ASNF where utility line maintenance may be needed, willow flycatchers nest nearby at two sites near the Town of Greer along the Little Colorado River and at a site near the Town of Alpine along the San Francisco River. There are few flycatcher breeding territories at high elevation, and the Greer location has been the most reliable high elevation location in Arizona. At their closest, power lines are about 100 yards from known flycatcher nesting locations on the San Francisco River, and range from about 0.25 mile to 3.5 miles away at the other known or potentially suitable nesting locations. Flycatchers could be found during migration on any of these streams and likely others.

Table 3. Power lines in the Phase 2 action area that cross over streams near known southwestern willow flycatcher breeding habitat that may require vegetation maintenance, National Forest Lands, Arizona.

Stream/ River Name	Power Line	Utility	Forest	# of times line crosses	Location of Crossing	In CH	Nearest Nest (miles)
Blue River	131	NEC	ASNF	20	Along Blue R. from New Mexico Border to W of Bear Mtn.	No	NA
Cherry Creek	500-3/ Coronado to Silverking	APS/ SRP	TNF	1	1.85 mi. W of Dagger Peak on S end of Cherry Creek	No	>3.5
Chevelon Creek	345-1	APS	ASNF	1	2.75 mi. South of Chevelon Canyon Campground	No	NA
Little Colorado River	62	NEC	ASNF	2	Near Greer	Yes	0.25/0.35
Little Colorado, East Fork	62	NEC	ASNF	2	Near Greer	Yes	NA
Little Colorado, West Fork	62	NEC	ASNF	1	Near Greer	Yes	NA
Salt River	500-3/ Coronado to Silverking	APS/ SRP	TNF	1	East of Roosevelt Lake	Yes	3.5
Salt River	PN145	SRP	TNF	1	East of Roosevelt Lake	Yes	0.40
San Francisco River	131	NEC	ASNF	1	Near Alpine	No	0.057
Tonto Creek	MZT-6	APS	TNF	2	At Punkin Center/ South of Jake's Corner	Yes	NA
Verde River	NW-2	APS	PNF/ CNF	2	West of Cornville/ East of Table Mountain	Yes	NA
Verde River	CU-6	APS	CNF	2	1.5 mi. south of Camp Verde	Yes	NA
Verde River	QS-10	APS	PNF	1	Near Perkinsville	No	NA

Table 3. Power lines in the Phase 2 action area that cross over streams near known southwestern willow flycatcher breeding habitat that may require vegetation maintenance, National Forest Lands, Arizona.

Stream/ River Name	Power Line	Utility	Forest	# of times line crosses	Location of Crossing	In CH	Nearest Nest (miles)
Verde River	500-2	APS	PNF	1	West of Perkinsville	No	NA

NA- No anticipated effects.

### Critical habitat

Power lines within the action area cross southwestern willow flycatcher critical habitat on six streams on the TNF, ASNF, CNF, and PNFs (Table 4). These streams and rivers include the Little Colorado River (and its East and West forks), Verde River, Salt River, and Tonto Creek. A total of 6.9 miles and 55.4 acres of power line occur in critical habitat. These acres represent the maximum ROW distance which is expected to be wider than actual treated area of vegetation.

Table 4. Power lines within the Phase 2 action area that cross designated southwestern willow flycatcher critical habitat (CH) that may require vegetation maintenance, National Forest Lands, Arizona.

River	Line Name	*OH or UG	Utility	Forest	Voltage	Distance in WIFL CH (miles)	Acres	# of Crossings
East Fork Little Colorado River	62	OH	NEC	ASNF	Dist.	0.19	1.38	2
Little Colorado River	62	OH	NEC	ASNF	Dist.	0.22	1.60	3
West Fork Little Colorado River	62	OH	NEC	ASNF	Dist.	0.02	0.15	1
Verde River	CU-6	OH	APS	CNF	Dist.	0.34	2.47	2
Verde River	HD-2	OH	APS	CNF	Dist.	0.07	0.51	1
Verde River	QS-10	OH	APS	CNF	Dist.	0.07	0.51	1
Verde River	CU-6	OH	APS	PNF	Dist.	0.17	1.24	2
Verde River	HD-2	OH	APS	PNF	Dist.	0.04	0.29	1
Verde River	NW-2	OH	APS	PNF	69kV	0.05	0.48	1
Verde River	QS-2	OH	APS	PNF	Dist.	0.5	0.36	1
Verde River	QS-2	UG	APS	PNF	Dist.	0.5	0.36	1
Salt River	500-3	OH	APS	TNF	500kV	0.22	7.33	1
Salt River	Coronado to Silverking	OH	SRP	TNF	500kV	0.22	7.33	1
Salt River	PN-145	UG	SRP	TNF	Dist.	0.33	2.40	1
Salt River	PN-145	OH	SRP	TNF	Dist.	0.52	3.78	2
Tonto Creek	MZT-6	OH	APS	TNF	Dist.	3.25	23.64	2**
Tonto Creek	MZT-6	UG	APS	TNF	Dist.	0.21	1.53	0**
<b>TOTALS</b>						<b>6.92</b>	<b>55.36</b>	<b>23</b>

\*OH = overhead line, UG = underground line

\*\* At Tonto Creek, the MZT-6 line crosses the creek in two locations, but the line parallels the creek, mostly outside of the floodplain. However, small, disjointed sections of line (17 sections for overhead and 3 for underground) enter into the 100 year floodplain).

### **Yellow-billed cuckoo**

Throughout all NFs, actions on and off the Forests have contributed to the decline in cuckoo habitat conditions. These riparian habitats are similar and believed to often, though not always, be shared with the southwestern willow flycatcher. Actions such as water diversion, groundwater pumping, habitat clearing, flood control, urban/agricultural development, livestock overgrazing, dam building, and dam operations, have changed surface and subsurface stream flows and have altered the quality, distribution, abundance, and longevity of riparian vegetation (USFWS 2002).

Riparian habitats by nature are dynamic, with their distribution in time and space governed mostly by flood events and flow patterns. Current conditions along southwestern rivers and streams throughout much of the Forests are such that normal flow patterns have been modified, flood events are more catastrophic as a result of degraded watershed conditions, stream channels are degraded, floodplains and riparian communities are reduced in extent, wildfires in riparian habitats are increasing, and the plant species composition in riparian communities are modified with exotic plant species (USFWS 2002). These conditions have significantly diminished the potential for southwestern rivers and streams to develop suitable nesting habitat for the cuckoos and for those habitats to remain intact and productive for nesting cuckoos.

A variety of methods were used to help determine where cuckoos might be found nesting within the action area (BA), however few to no intensive surveys have been conducted since 1998/1999 (Corman and Magill 2000). Locations from surveys/observations were plotted from recent literature (Corman and Magill, 2000, USFS 2002, USFS 2003) and from information gathered from Arizona Game and Fish Department's Heritage Data Management System. These records more typically represent detections rather than nesting locations since nests are difficult to detect and in some instances migrants were likely recorded. No statewide predictive habitat model has been created for nesting yellow-billed cuckoo habitat. However, due to the similarities in habitat preferences between cuckoos and flycatchers, the southwestern willow flycatcher habitat suitability model (Dockens *et al.* 2004) was queried. The flycatcher model is believed to provide, with our limited information, the best estimate of cuckoo nesting habitat suitability (BA).

Foraging habitat for cuckoos may encompass a broader range of habitat than the habitat needed specifically for nest placement. Cuckoos spend the majority of their foraging in cottonwoods (Hamilton and Hamilton 1965, Halterman 1991, and Halterman and Laymon 1994, 1995), but may also forage in stands of smaller mesquite trees or even tamarisk (Johnson *et al.* 2005). Because there are not currently good data indicating where foraging habitat occurs within the action area or a relevant model to estimate where foraging habitat may occur, the FS (BA) assumed that all of the power line crossings over drainages with potential or suitable cuckoo habitat (Table 5) and possibly additional drainages not listed in the following paragraph, could provide suitable habitat components for foraging cuckoos.

The FS's BA stated that drainages with cuckoo habitat where power lines are present in the action area include: the Blue River, Cherry Creek, Little Colorado River, Oak Creek, Pinal Creek, Salt River, San Francisco, Spring Creek, Tonto Creek, Verde River, West Clear Creek,

Wet Beaver Creek and Oak Creek, Tonto Creek, Wet Beaver Creek, and West Clear Creek. Portions of these streams can be found on the ASNF, CNF, PNF, and TNF.

After examining these streams, the FS's concluded that there may be cuckoo nesting and/or foraging habitat at or near power line crossings within the action area on the TNF at Cherry Creek, Salt River, Tonto Creek, and the Verde River, PNF along the Verde River, and CNF along Oak Creek, West Clear Creek, Wet Beaver Creek, and the Verde River (Table 5). Migrant cuckoos could be located on an unpredictable number of streams throughout the Forests and within the action area.

The FS concluded that there are likely no nesting cuckoos along the Little Colorado River, Blue River, and the San Francisco River near where the power lines cross as determined by reviewing 1998 to 1999 surveys that indicate that historical and surveyed detections of cuckoo in these drainages occurred well outside of the action area (Corman and Magill 2000). Additional site visits confirmed this conclusion by assessing habitat at the Blue River and San Francisco River locations (BA). In addition, the areas where the power line NW-2 crosses the Verde River are also considered yellow-billed cuckoo habitat, but surveys have not located the birds in these areas (G. Beatty 2006, USFWS, pers. comm.).

After specifically analyzing known information and using the flycatcher habitat suitability model, the FS determined that suitable nesting cuckoo habitat either was present at power line crossings on Wet Beaver Creek (two crossings), West Clear Creek (one location in the floodplain that does not cross the creek), and the Verde River (two crossings), or is possibly present on Oak Creek (multiple crossings), Tonto Creek (two crossings), the Verde River (one crossing), and the Salt River (two crossings).

The FS (USFS 2008) recently submitted a biological assessment for emergency actions occurring prior to Phase 1 and 2 activities and concluded that these actions were "not likely to jeopardize" the cuckoo. They did provide site specific information for APS CU-06 line concluding that "on the CNF, two large cottonwood trees were pruned on private land along the APS CU-06." This is the West Clear Creek area described as likely having suitable breeding habitat (Table 5).

Table 5. Power lines in the phase 2 action area that cross or parallel streams or rivers with yellow-billed cuckoo breeding habitat, National Forest Lands, Arizona.

Stream/ River Name	Power Line	Utility	Forest	# of Crossings	Location of Crossing	Acres*	Suitable Breeding Habitat Likely Present?***
Cherry Creek	500-3/ Coronado to Silverking	APS/ SRP	TNF	2	1.85 mi. W of Dagger Peak on S end of Cherry Creek/ 8.5 mi. NE of Young	21 acres	No
Oak Creek	NW-5	APS	CNF	1	2.5 mi. NE of Sedona	2.81 acres	No
Oak Creek	SE-6	APS	CNF	1	2.5 mi. NW of Sedona	5.09 acres	No



Table 5. Power lines in the phase 2 action area that cross or parallel streams or rivers with yellow-billed cuckoo breeding habitat, National Forest Lands, Arizona.

Stream/ River Name	Power Line	Utility	Forest	# of Crossings	Location of Crossing	Acres*	Suitable Breeding Habitat Likely Present?***
Oak Creek	SE-14	APS	CNF	Multiple	Parallels and crosses in multiple locations in Oak Creek Canyon	20.94 acres	Possible
Oak Creek	QS-2	APS	CNF	2	1.25 mi. north of Page Springs	3.02 acres	No
Salt River	PN145	SRP	TNF	1	East of Roosevelt Lake	2.12 acres	Possible
Salt River	500-3/ Coronado to Silverking	APS/ SRP	TNF	1	East of Roosevelt Lake	14.66 acres	Possible
Tonto Creek	MZT-6	APS	TNF	2	At Punkin Center/ South of Jake's Corner. Parallels the Creek and enters the floodplain in multiple locations	25.17 acres	Possible
Verde River	NW-2	APS	PNF/ CNF	2	West of Cornville/ East of Table Mountain	0.48 acres	No
Verde River	CU-6	APS	CNF	2	1.5 mi. south of Camp Verde	3.56 acres	Yes
Verde River	QS-10	APS	PNF	1	Near Perkinsville	1.60 acres	Possible
Verde River	230-2	APS	PNF	1	South of confluence of Verde and Sycamore Creek	0.82 acres	No
Verde River	500-2	APS	PNF	1	West of Perkinsville	1.09 acres	No
West Clear Creek	CU-6	APS	CNF	-zero	Does not cross but occurs in the floodplain. Just outside of Camp Verde Town limits.	1.93 acres	Yes
Wet Beaver Creek	MG-10	APS	CNF	2	At Rimrock Montezuma Castle National Monument/ At Ranger Station	3.07 acres	Yes

\* Acres were calculated very conservatively and likely represent a larger area of the floodplain than actually present.

\*\*Suitable breeding habitat was determined using survey information, Arizona Game and Fish Heritage Database Management System Data, and the WIFL habitat model demonstrating high quality riparian vegetation with habitat probability of greater than 40%

### **Loach minnow**

Within the action area, loach minnow occur in the following locations: Blue River, Campbell Blue Creek, and Fossil Creek. A complete record documenting the status of the species and critical habitat in the stream reaches that are directly and indirectly affected by the proposed action are not currently available. Therefore, we provide general information on the status of the

species and critical habitat for each stream reach. The following information for the Blue River and Campbell Blue Creek originated from the loach minnow critical habitat final rule (USFWS 2007).

The Blue River extends 51.1 miles from the confluence with the San Francisco River upstream to the confluence of the Campbell Blue and Dry Blue creeks. The Blue River was occupied at the time of listing and continues to be occupied by loach minnow today. The Campbell Blue Creek extends 8.1 miles from the confluence of Dry Blue and Campbell Blue Creeks upstream to the confluence with Coleman Canyon. This area is considered occupied based on previous surveys within the creek. In Fossil Creek, loach minnow were released above the fish barrier which is approximately 2.5 miles downstream from the nearest utility line corridor.

Our records indicate that loach minnow have been documented within the vicinity ( $\leq 1$  mile) of all of the low-water crossings throughout the  $>20$  mile section of Campbell Blue Creek and Blue River. The specific number, frequency, and/or use of vehicles using these low-water crossings are not specifically known. However, there are data from October/November 2007 that documents the frequency of vehicle traffic along CR-281 and FS-567 by recreationists, private landowners, and others. These roads follow and or provide access to NEC utility distribution line #131. The FS conducted a survey of vehicle traffic in several locations along CR-281 and one on FS-567. The first survey block occurred between October 30 and November 7, 2007, and the second survey occurred between November 9 and November 14, 2007. The vehicle counts within one survey period ranged from 21 to 337. The frequency of use along these roads correlates with the October and November elk and deer hunting season; therefore, these numbers were likely higher than the average annual use.

Loach minnow are susceptible to mortality when vehicles cross stream channels or at low-water crossings. Adverse effects of roads and road crossings on streams have been documented for many types of streams and fish species (Dobyns 1981, Meehan 1991, Megahan *et al.* 1992, Young 1994) and can include disturbance, which results in sudden dispersal that can impair feeding or sheltering; crushing by vehicles; and habitat destruction. Vehicles crossing streams may also cause a wash out of sediment on the stream bottom. A wash out of sediment on the stream bottom may reduce the availability of spawning habitat by filling in spaces between cobble and rubble substrate a short distance downstream while at the same time potentially improving the spawning habitat for loach minnow where vehicles cross. When spawning, loach minnow fix the eggs to the underside of rocks in shallow riffle areas; these eggs may be susceptible to crushing if vehicles cross streams during the spring spawning season.

## **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.

## **Mexican spotted owl**

### **Aerial patrols and LIDAR flights**

Noise from all air operations, especially low-flying aircraft, can contribute to the disturbance of MSO. Low-level flights have the greatest potential to disturb owls because these aircraft move slowly and are relatively noisy (Delaney *et al.* 1997). Although the effects of over-flights may vary with location, specific conditions, and aircraft type, Delaney *et al.* (1999) found that a 345-foot hemispherical management protective zone should minimize, and possibly eliminate, spotted owl flush response and negative effects to prey delivery rates associated with helicopter over-flights. However, the proposed action includes APS, WAPA, and SRP conducting one to five helicopter flights per year along utility lines during the breeding season at altitudes less than 345 feet and as low as 50 feet. The LIDAR flights are expected to occur primarily at 500 feet above the ground, but occasionally may drop to about 300 feet which is within the 345 foot hemispherical management protective zone. Flushing and/or disrupting incubating, breeding, or foraging owls can adversely affect breeding attempts by damaging or breaking eggs; and reducing foraging success and prey deliveries to incubating adults, fledglings, and/or nestlings. There is potential to disrupt breeding MSO, particularly within a subset of 16 PACs (Table 6) within the action area due to the timing of and potential frequency of flights needed in combination with utility vegetation treatment activities in areas of high tree density, over the 10-year life of this project.

### **Ground patrols and inspections**

Ground patrols and inspections may occur at various times throughout the year for each utility for the purpose of hazard vegetation identification and line maintenance, routine vegetation maintenance planning, routine vegetation or line maintenance, wood pole inspections and treatments, transmission climbing inspections, underground patrols, and for auditing work. All of these types of patrols could occur during the MSO breeding season. Ground patrols are conducted a total of 1 to 4 times a year for vegetation management and line maintenance (except for CDS-2, PJ-1, and WSP-12 that could be ground patrolled up to 6 to 8 times a year).

Swarthout and Steidl (2001) found that MSO modified their behavior (e.g., increased perch height) and/or flushed in response to recreationists (hikers). Ground patrol crews will consist of one to four people driving a pickup truck, ATV, or walking and are brief, taking a few hours to a day for a particular area along a line. The ground patrols could temporarily startle or even cause MSO to flush off the nest or roost temporarily; however, it is not expected that the MSO would have a reduced ability to provide for the young or decreased prey delivery because of the short duration and the relatively low levels of noise from ground patrols.

### **Hazard line maintenance and hazard vegetation treatments**

For hazard vegetation trimming and removal treatments, the crews use chainsaws to perform the work which can be disruptive to breeding owls, and the removal of trees from within protected and restricted habitat may result in a loss of large dbh trees, reduced canopy closure within and adjacent to the utility line corridor, and reduced numbers of snags. Hazard vegetation work requires 2 to 6 people and may take a few hours to several weeks to complete for a particular area. Chainsaw sound levels will range from 106 to 117 dBA, which exceeds the sound level for flushing in response to disturbance (Delaney *et al.* 1997). It is unknown where hazard vegetation may be trimmed or removed, but hazard vegetation could potentially be trimmed or removed within or near (0.25 mile) a number of MSO PACs (BA, Table 25). However, there are 16 PACs

where disturbance is most likely to occur (BA, Table 26). These 16 PACs have higher densities of dead or dying trees due to environmental factors and/or vegetation has not been maintained for a decade or more. Following routine vegetation maintenance treatments along these power lines, we expect that the probability of hazard vegetation maintenance activities will be reduced.

Hazard line maintenance work for overhead and underground lines may be conducted at any time of year. This work typically requires 2-4 workers, but may require up to 15 people and take hours to a couple of weeks to complete. Vehicles may include: bucket truck, boom truck, hole digger truck, 4x4 truck, crane, caterpillar, snowcat, cable puller truck, backhoe, and trailer attachments. The large trucks (large bucket truck, crane, boom truck) are typically only used on well-established roads. Vehicles remain on established access routes or crews park vehicles and walk in if access routes are not available. The large trucks may produce more noise than an ATV or 4x4 truck, but likely do not produce sounds above 95 dBA. Work could last for a short period (less than one day) to a longer time frame (multiple days or weeks).

Mechanical noise and human presence during the breeding season may result in failed reproductive efforts, abandonment of the nest, and/or starvation (USFWS 2001). For underground work, repair of an underground cable may be necessary. This would require a backhoe driving within the corridor to dig up the line. In many cases, access to the line is available on existing access routes, but vegetation treatments may be necessary in order for the backhoe to gain access (effects to habitat due to these treatments are discussed below). This work would be conducted in the same way that the overhead hazard vegetation would be treated and may result in the same types of direct effects to the MSO as hazard vegetation treatments described above.

Most of the underground lines have a very small section of line in the PAC at the very edge of the PAC (lines 62, PR-6, CDS-2, WSP-12, HC-2 and STR-2) (BA, Table 28). The underground CQ-12 line on the CNF is the only one of the underground lines that transects an entire PAC (#40541). Although noise disturbance within a PAC, especially during the breeding season, can result in adverse effects, the noise disturbances associated with lines that have small segments along the outer edges of PACs will likely be less severe due to the short duration of those activities and the small amount of line to be worked on. Noise disturbance along the 1.36 mile of the CQ-12 line is likely to be more significant than the other lines due to the greater area being worked on within a PAC. Limiting potentially disturbing activities to areas  $\geq 0.25$  mile from MSO nest sites during the breeding season (March 1 to August 31) will decrease the effects of noise disturbance (Delaney *et al.* 1997 and 1999).

Because many hazard vegetation, hazard line maintenance problems, and underground cable repairs are considered “imminent” hazards, it is not possible to avoid imminent hazard treatments during the breeding season. Implementing MSO Conservation Measure number 3 from the Proposed Action, when possible, will help minimize some effects due to hazard treatments. Imminent hazards could be treated during the breeding season within or adjacent to any of the PACs (BA, Table 25). However, there are 16 PACs with a high potential for disturbance described in the BA (Table 26). The presence of humans and/or noise disturbance from vehicles (<95 dBA) and chainsaws at 106 to 117 dBA during the breeding season could result in failed reproductive efforts, abandonment of the nest, and/or starvation. The duration of vegetation and line maintenance hazard efforts is generally short and occurs from hours to a couple of weeks at a time. For hazards that are not imminent, the utilities have agreed to implement MSO

Conservation Measure number 5 to minimize effects, if possible. Overall, hazard treatments could have adverse effects to MSO; however, as previously stated, these effects would most likely only occur in the 16 PACs listed in BA (Table 26).

### **Routine vegetation maintenance and non-hazardous line maintenance treatments**

The utilities have agreed to implement conservation measures O1 and O2 for non-hazardous line maintenance work and routine vegetation maintenance work to minimize effects to breeding MSO. These conservation measures ensure that no direct effects would occur to breeding MSO due to routine vegetation maintenance and non-hazardous line maintenance treatments. Noise disturbance as described above may still affect MSO outside of the breeding season, disrupting foraging behavior and increasing flush responses.

Although effects to MSO will be minimized during the breeding season, effects to MSO habitat (PACs, protected steep slope, and restricted) are likely to occur outside of the breeding season. The Recovery Plan (USDI 1995) recommends no harvest of trees greater than nine inches dbh in PACs. However, it is reasonably certain that trees greater than nine inches dbh will be removed during the 10-year duration of this project for utility vegetation management (both hazard vegetation and routine vegetation maintenance) within PACs because hazard trees of any size must be removed for safety purposes. Vegetation treatments could occur in 56 PACs (BA, Table 25). Of these 56 PACs, 16 have been identified as having lines which transect a portion of the PAC rather than occur along the edge; therefore tree removal could have a higher potential to cause adverse effects within these 16 PACs. This includes three PACs on ASNF, six on the CNF, four on the PNF, and three on the TNF (see Table 6 below).

Table 6. Mexican spotted owl PACs in the Phase 2 action area where power lines are present within their boundaries, National Forest Lands, Arizona.		
Forest	PAC Name	PAC Number
Apache-Sitgreaves NF	Hannagan Creek	010115
	WFLCR	010613
	Whiting Knoll	010616
Coconino NF	Snowbowl Road	040205
	Pumphouse Wash	040512
	Lockwood	040541
	Blue Ridge	040705
	Rock Xing	040712
Prescott NF	Aqueduct	040734
	Big Bug	090302
	Lorena Gulch	090305
	Smith Ravine	090306
Tonto NF	Wolf	090314
	Gordon – Upper	120403
	Camp Geronimo	120419
	Turkey Peak NW	120506

Other key habitat components may also be removed in MSO PACs. Large trees, hardwoods, and snags may be removed. Vegetation removal could occur within the power line corridor or outside of the corridor. Removal of large trees and snags may result in reduced availability of nesting and roosting habitat within the 16 PACs listed above (Table 6). Removal of vegetation, particularly through routine vegetation maintenance treatments, could also reduce the canopy cover, alter the canopy structure (e.g. multi-storied), reduce and remove snags, create openings, and increase the amount of large downed logs inside and outside the corridor. However, these habitat alterations involve a small portion of the surrounding habitat and are concentrated within a previously disturbed power line ROW that is currently different than surrounding habitat (i.e. power line corridors have been treated at least once during construction or have been continually maintained). The lines listed in the BA requiring extensive clearing will require more vegetation treatment than the lines requiring routine maintenance (BA, Table 26).

While vegetation removal could decrease the overhead canopy by removing tall growing species, the understory cover and residual plant cover would not directly be altered by hazard vegetation removal. However, it is expected that as the corridors are opened wider, herbaceous understory may increase, which may benefit prey species. The power line corridors have been logged at least once historically. The corridors are not considered unlogged forested areas. Vegetation may be removed in unlogged areas outside of the power line corridor. The abundance of downed logs for prey habitat would increase due to vegetation removal and disposal, particularly in areas where the utilities are able to implement the conservation measure of leaving large logs whole at the edge of the ROW (CM # O4). These effects may result in altered foraging habitat and prey species habitat with decreased overstory canopy, increased abundance of downed logs for prey habitat, and possibly removals in unlogged forested areas just outside of the power line corridor.

The analysis in the BA did not designate protected steep slope habitat and restricted habitat separately. Although these two habitat types are generally considered with a separate analysis for MSO, the two habitat types were combined for this consultation. From the analysis for protected steep slope and restricted habitat, it was determined that there is a total of 7,336 acres of MSO habitat within the project area. This acreage was calculated using the maximum ROW from the BA (BA, Table 1). Of the 7,336 acres, 984 acres occur in underground distribution line ROWs and 6,352 acres occur in overhead transmission and distribution ROWs (BA, Table 30); however, we do not expect that every acre would be treated. The project area calculations use the maximum width that the utilities may clear. In some areas, the utilities may not require as much clearance. The MSO protected steep-slope and restricted habitat was determined using TES (Terrestrial Ecosystem Survey) data where available; where TES data were not available, GES (General Ecological Survey) data were used (Mellin 2003). Vegetation associated with the MSO was determined as all mixed-conifer and mixed-conifer transition for all national forests. All pine or pine-oak stands with one percent or greater canopy cover in Gambel oak were included. From this analysis, GIS layers were created demonstrating the protected and restricted habitat and were over-laid on maps with the power lines in the project area. This analysis probably represents more than the total amount of MSO protected habitat, and less of the existing restricted habitat (Mellin 2003). This protected steep-slope and restricted habitat were used to define MSO habitat within the action area (USFS 2004).

It is reasonably certain that trees greater than nine inches dbh will be removed during the 10-year period of the Phase II programmatic consultation within MSO protected steep slope habitat in any of the power lines listed in the BA (BA, Table 23). Additionally, vegetation removal for the

action may include removal of trees greater than 24 inches dbh, and removals of hardwoods, snags, and large trees. These treatments could also occur in any of the power lines listed in the BA (BA, Table 23).

Hardwoods, large downed logs, and snags may be removed in MSO protected steep slope and restricted habitat. Removal of large trees, hardwoods, and snags could reduce the availability of nesting, perching, and roosting habitat. Disposal of vegetation could increase the amount of large downed logs inside and outside the corridor. Removal of hardwoods, snags, and large trees could adversely affect MSO by removing important habitat components for the MSO or its prey.

The Recovery Plan (USDI 1995) also states that “management priority should be placed on reducing identified risks to spotted owl habitat”. One of the main identified risks to the MSO is high-severity, stand-replacing fire. While vegetation is not expected to ignite a high severity, stand replacing wildfire, vegetation near power lines may pose a fire threat that could result in a fire start. By removing hazard vegetation and treating vegetation through routine vegetation management prior to vegetation becoming a hazard, the chance of a fire start from ignition by a power line should be reduced.

Under this consultation, vegetation may be removed within riparian areas, although this has only occurred occasionally. The possibility of removing hazard vegetation within a riparian area is low, but could occur in any of the power line stream or river crossings. Within the riparian areas, vegetation removal would likely only include one to a few individual trees in an area that would not significantly affect a stream reach or stream health. Impacts to MSO riparian habitat due to vegetation removal would likely be insignificant.

In summary, hazard vegetation treatments, routine vegetation maintenance, and vegetation removal for underground repair could have adverse effects on MSO in 16 PACs (3 on ASNF, 6 on CNF, 4 on PNF, and 3 on TNF) by removing or altering important habitat components within and just outside the power line ROW.

### **Disposal of vegetation**

Disposal of vegetation involves lopping, scattering and/or chipping of limbs; chopping, scattering, and/or removing trunks; and piling and/or burning slash. Disposal associated with hazard vegetation removal may occur within 0.25 mile of a PAC during the MSO breeding season. The human traffic and chainsaw noise may cause noise disturbance as described above. This noise disturbance and the presence of humans during the breeding season could result in failed reproductive efforts, abandonment of the nest, and/or starvation. Disposal activities for routine vegetation maintenance would occur outside of the MSO breeding season and direct effects to breeding MSO would not occur. Although disposal activities for routine vegetation maintenance will occur outside of the breeding season, these activities (both the vegetation maintenance and vegetation disposal) may still lead to increased flush responses and disruption of foraging behaviors as described above in the vegetation maintenance section. The utilities have agreed to implement the MSO Conservation Measure number 4 to aid in providing prey habitat where possible for hazard vegetation and routine vegetation maintenance disposal.

### **Access route repairs**

Access route repairs may be conducted by the utilities to gain access to a line using an existing access route. While it is unknown exactly where these actions would be located, this action is

infrequent to very infrequent (occurs <1 to <6 times a year for all access routes of all lines). Therefore, it is highly unlikely that access route repairs would be required within 0.25 mile of owls during the breeding season. However, if this event does occur during the breeding season, the work would be conducted as part of vegetation or line maintenance work and would likely impact the same PACs as the hazard work. Access route repairs, if conducted near a PAC, could result in failed reproductive efforts, abandonment of the nest, and/or starvation. However, as previously stated, this action is unlikely to occur during the breeding season.

### **Mexican spotted owl critical habitat**

Within the action area, the critical habitat is limited to areas that meet the definition of protected steep slope and restricted habitat in the Recovery Plan (USDI 1995). These areas incorporate most of the mixed conifer, ponderosa pine/Gambel oak and higher elevation riparian forest types found within the five national forests. The critical habitat analysis was conducted by overlaying protected steep slope and restricted habitat layers with designated MSO critical habitat boundaries to estimate the quantity of critical habitat in the action area that have habitat components suitable for MSO. As previously described, approximately 313 miles of line with approximately 3,914 acres critical habitat has been identified as meeting the definition of critical habitat (BA, Table 31). Canyon habitat, as defined in the critical habitat rule (USDI 2004), will not be impacted by the proposed action. Therefore, we will not analyze the effects of this project on the primary constituent elements of canyon habitat. All discussion below referring to critical habitat only considers the protected steep slope and restricted habitat within MSO critical habitat units.

We identified primary constituent elements in the final rule designating critical habitat (USDI 2004). The importance of each of these components to MSO habitat is described in the final rule (USDI 2004) and the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. The expected effects on the primary constituent elements of MSO critical habitat as a result of this utility corridor maintenance project are summarized below by forest structure and prey species habitat.

### **Forest Structure**

#### *Range of trees species, tree size*

In forested critical habitat, a range of tree species, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with dbh of 12 inches or more, is desired. Diversity in tree size distributions is typical of MSO habitat and provides the vertical structure that is thought to be important to owls (Seamans and Gutierrez 1995). We do not know how many large, live conifers (pines and firs) greater than 18 inches dbh, large snags, conifers less than 18 inches dbh, and Gambel oak (or other hardwood tree species) will be removed as a result of this action. However, the removal of hazard vegetation, as well as routine vegetation maintenance, will result in impacts to the size and species structure of MSO critical habitat along utility corridors. For hazard vegetation removal, only single trees or small clumps of trees that pose a hazard to the power line will be removed, while routine vegetation maintenance will require the removal of all tall growing species and some lower growing species in the power line corridor and within a 10-foot radius around poles and 40 feet around towers. This impact to tree species diversity and loss of certain sized trees will result in a short-term adverse effect to this primary constituent element. Large, live trees are an important element of



MSO habitat, and owl use is often correlated with a medium-to-large tree component (USFWS 1995). Large trees and snags take many years to develop and are very difficult to replace, even over the long-term.

*A shade canopy created by the tree branches covering 40 percent or more of the ground*

We expect that shade canopy may be reduced in small patches following hazard tree removal and routine vegetation maintenance along utility corridors. It is possible that routine vegetation maintenance will reduce shade canopy below 40 percent in some areas, especially along transmission line corridors, which are typically maintained as wide and open. We would expect that some small openings may actually aid in increasing the understory herbaceous and forb production along utility corridors and in adjacent MSO habitat, which may benefit MSO prey species.

*Large, dead trees (snags) with a dbh of at least 12 inches*

Large snags will most likely be reduced following hazard tree removal. The reduction of this habitat component may be significant in terms of maintaining MSO and prey habitat. However, since snags are likely to be identified as hazard vegetation along utility corridors, it is likely that following hazard tree removal within the project area, this habitat component may be lost locally within the power line ROW, resulting in adverse effects to this primary constituent element.

**Maintenance of adequate prey species**

*High volumes of fallen trees and other woody debris*

After vegetation is removed, the branches of the tree are cut away from the trunk and lopped and scattered off of the power line corridor. The different utilities have variable means of dealing with slash. In general, felled trees will be lopped in manageable lengths and either scattered throughout the immediate area, within or adjacent to the power line corridor. These actions may result in reduced large, full length logs on the ground, which may result in reduced prey habitat in the power line corridor. In general, the larger the diameter and the greater the length of a log, the more useful it is to wildlife (Maser *et al.* 1979), which includes MSO prey species. By cutting the trees into smaller lengths, the logs may be less attractive habitat for prey species; however, implementation of MSO Conservation Measure number 4 will help reduce the number of logs cut, scattered, and removed. When feasible, large logs (> 12 inches dbh) and snags will be left along the edges of corridors within or adjacent to PACs, thereby increasing the volume of fallen trees and woody debris.

*A wide range of tree and plant species, including hardwoods*

We expect that this primary constituent element will be adversely affected by the proposed action similarly to the tree species range/size primary constituent element associated with “Forest Structure”, described above, resulting in a loss of tree species diversity. Despite the overall loss of tree species diversity, we also anticipate that plant species richness will likely increase in these canopy gaps created through hazard tree removal, which could lead to increased prey habitat.

*Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration*

As more trees are removed from the utility corridors and the canopy is opened, there will likely be increased herbaceous plant growth within the corridor. The mosaic effect created by opening up patches of forest within protected and restricted habitat is also expected to increase

herbaceous plant species diversity and, in turn, assist in the production and maintenance of the MSO prey base. The function and conservation role of this primary constituent element should not be compromised by the proposed action.

In summary, MSO critical habitat primary constituent elements may be adversely affected by the proposed action. Snags, large trees, and hardwoods will be lost during hazard tree removal and routine vegetation maintenance. However, we find that the effects to the function and conservation role of critical habitat relative to the Basin and Range West, Colorado Plateau, and Upper Gila Mountains RUs and the entire designation are not significant because the impacts will be temporary and occur in a very small area relative to the three RUs and the overall critical habitat designation. Of 3.2 million acres of critical habitat on NF lands in Arizona, the habitat alterations discussed here may affect up to 3,914 acres, which is less than one percent of the total critical habitat designated on FS lands in Arizona. Therefore, we conclude that the primary constituent elements of MSO critical habitat will continue to serve the intended conservation role for the species with the implementation of the proposed action.

### **Southwestern willow flycatcher**

We anticipate that due to the 10-year length of this project and the wide variety of activities involved, utility line vegetation management will cause some incidental take of southwestern willow flycatchers at specific known breeding sites and adverse effects to designated critical habitat. However, utility lines are typically perpendicular to rivers and in many instances cross streams at canyons where vegetation management is not required. As a result, overall there will be limited work accomplished in riverine areas, and aerial patrol presence over rivers will be brief. Additionally, the utility companies have proposed measures to reduce and minimize potential effects to the southwestern willow flycatcher (see Conservation Measures in the Proposed Action).

Riparian habitat is dynamic, which can lead to relatively rapid shifts in habitat quality for breeding flycatchers. What was once nearly bare ground can grow into dense riparian forest within five years and support nesting flycatchers. To try and anticipate habitat suitability and where proposed actions may or may not affect flycatchers throughout the action area, the FS used the southwestern willow flycatcher habitat suitability model (Dockens *et al.* 2004). This model used satellite photos from the early 2000s when habitat had recovered following significant flooding events in 1993 and 1995. Therefore, the “snapshot in time” used for this analysis is one where vegetation/habitat was more likely to be in conditions that would reflect its current capacity to support nesting flycatchers. There are three specific locations (PN-145 on the Salt River/Roosevelt Lake, 500-3 Coronado-Silverking, and Line 131 on the San Francisco River near the Town of Alpine) where power lines are in close proximity to known occupied southwestern willow flycatcher breeding habitat.

The subsequent effects analysis reflects our current knowledge of flycatcher habitat, distribution, abundance, and ability to predict future locations. Because this project extends over a 10-year time period and over a wide geographic area, it is possible that additional surveys will occur that will detect flycatchers in locations not previously known, and/or our ability to understand and predict where nesting flycatchers occur may change.

**Aerial patrols and LIDAR flights**

Because power lines throughout most of the action area in riparian habitat are primarily perpendicular to streams, the length of time helicopters are within or near flycatchers and their habitat is anticipated to be brief (seconds to minutes). Helicopter flights are not anticipated to fly directly over any known flycatcher nesting areas, because no known nesting areas are underneath power lines (BA). In some areas where flycatcher habitat exists, flights will not occur. Due to the height of helicopter flights and the short duration near habitat, we do not anticipate that the helicopters will damage or alter flycatcher habitat.

Known flycatcher breeding sites are in closest proximity to SRP PN-145 line (distribution lines at the upper end of Roosevelt Lake) on the TNF and NEC distribution line (131 line) along the San Francisco River on the ASNF. Aerial patrols are not expected to result in any effects to birds at these sites, because SRP does not aerially patrol distribution lines and NEC does not conduct any aerial patrols. As a result, we do not anticipate any effects to flycatchers at known breeding locations from aerial flights/patrols.

For non-hazard line maintenance work on the PN-145 line that crosses the Salt River, SRP may use a helicopter to transport equipment to the line. This would be a very infrequent action and would occur outside of the flycatcher breeding season. Therefore, any noise or wind generated from the helicopter is not anticipated to result in an adverse affect to flycatchers, because no flycatchers would be present and no effect to the habitat is anticipated.

APS LIDAR helicopters can fly 300 to 1000 feet agl, but are typically at 500 feet agl. Additionally, APS proposes to not land the helicopter for refueling within 0.25 mile of southwestern willow flycatcher occupied breeding habitat during the nesting season. As a result, any disturbance caused to breeding southwestern willow flycatchers as a result of LIDAR flights are anticipated to be short in time and duration and small in intensity, and would likely represent isolated and not repeated events; therefore, we anticipate any disturbance to breeding flycatchers will be insignificant.

**Ground patrols and inspections**

We do not anticipate that vehicles associated with ground patrols/inspections will result in significant adverse effects to breeding southwestern willow flycatchers. Vehicles associated with ground patrols will stay on existing two-track roads within the floodplain within known flycatcher nesting habitat along the Salt River near Roosevelt Lake (PN 145). Along the San Francisco River (line 131) where territories are known, crews will park vehicles out of the floodplain. No vegetation management is anticipated to occur under this activity that would alter habitat suitability. As a result, no damage to known flycatcher breeding habitat is anticipated from vehicles conducting ground patrols.

We also do not anticipate that on-the-ground foot crews inspecting poles, conductors, associated hardware, and vegetation for these distribution lines will cause significant adverse effects to breeding southwestern willow flycatchers. If crews must leave a vehicle to enter inspection areas on foot (which is largely anticipated for many locations within floodplains), they are expected to walk between habitat patches, rather than through habitat. Because they are avoiding the dense habitat patches where flycatcher place nests, we do not anticipate disturbance to flycatchers at the nest. Foraging southwestern willow flycatchers can be found along streams in less dense habitat and away from a nest. Therefore, it is reasonable to anticipate that when crews

are walking or working in and around flycatcher habitat, on-the-ground inspectors could briefly flush or startle a foraging flycatcher. These incidents are anticipated to rarely occur and be of short duration; therefore we anticipate that the effect from rare and short duration disturbance from on-the-ground inspection crews to breeding flycatchers will be insignificant.

### **Hazard vegetation removal and hazard line maintenance repairs**

Because of the unpredictable nature of some hazard line maintenance problems and hazard vegetation, treatment is often required as soon as possible (i.e. to prevent fire, retain line safety, deliver power, etc.). The FS along with the utilities examined the likelihood of needing to conduct hazard line and vegetation removal at locations where breeding flycatcher sites are known. The power lines PN-145 (SRP), 131 (NEC), and 500-3/Coronado to Silverking (APS and SRP) were identified as having nesting flycatchers nearby.

#### Hazard vegetation removal

For all three locations (described above), utilities concluded that there was a small likelihood for the need for hazard vegetation removal. Hazard vegetation and line maintenance work along the 500-3 and Coronado to Silverking lines is not needed since the lines span high enough above the Salt River that vegetation would not pose a hazard and the towers for these lines are placed on top of the banks on either side of the river. SRP described that hazard vegetation treatments along the PN-145 line are unlikely to occur during the flycatcher breeding season (approximately May 1 to August 30) based on a field inspection in October 2007. Hazard vegetation treatments would not occur where flycatchers are known to occur along the 131 line that crosses the San Francisco River.

#### Hazard line maintenance repairs

Trucks and workers conducting hazard line maintenance work along the PN-145 (upper end of Roosevelt Lake on Salt River arm) and 131 power lines (San Francisco River) are anticipated to disturb breeding flycatchers. We do not anticipate a loss of nesting and/or foraging habitat through hazard line maintenance repairs. The length of time work may take to complete is unpredictable and could last less than a day to multiple days or weeks.

We do not anticipate any loss of flycatcher breeding habitat due to vehicles, because vehicles do not enter the San Francisco River floodplain on the 131 line, and vehicles drive only an existing, open, two-track road into the Salt River floodplain near the PN-145 line. Crews are expected to walk equipment in from where the vehicles are parked. No alteration of flycatcher habitat is anticipated to result from hazardous line maintenance repair, because this activity is focused on repair of the actual power line structures.

Vehicle activity approaching and exiting flycatcher habitat during the breeding season conducting hazard line maintenance may startle or surprise flycatchers outside of their nest area, but these incidents are anticipated to be rare in occurrence and of short duration. Therefore, any disturbance to flycatchers caused by vehicles on the PN-145 and 131 line or in other riparian areas, is anticipated to be insignificant.

We do anticipate that on-the-ground work crews conducting hazard line maintenance repairs along the San Francisco River (131) and upper Salt River arm of Roosevelt Lake (PN-145) will cause disturbance to nesting flycatchers that result in harassment. The nearest flycatcher nest along the 131 line is approximately 100 yards away. And while the nearest surveyed nest

location along the PN-145 line is 0.4 miles away, the habitat at the upper end of Roosevelt Lake is highly dynamic, changing from one year to the next. As a result, because this project occurs over a 10-year time frame, the close proximity of known breeding birds, the fidelity of flycatchers to general breeding sites, the persistence of breeding flycatchers at these sites, the dynamic nature of flycatcher breeding habitat, the potential for maintenance during the breeding season, and the weeks a single repair may take to complete, we believe there is reasonable certainty that crews conducting hazard line maintenance repairs at the 131 and PN-145 lines will disturb breeding southwestern willow flycatchers.

The disturbance to breeding flycatchers (i.e. preventing nest construction, flushing from nest/eggs, leaving nest and exposing eggs/young to predators, disturbance while selecting mates, disturbance while foraging, etc.) from ground crews, equipment, and generated noise for extended periods of time at PN-145 and line 131 is anticipated to prevent nesting, cause failure of nesting attempts with eggs/young, and/or a reduced number of eggs laid/young hatched.

### **Routine vegetation maintenance and non-hazardous line maintenance treatments**

The FS and utilities have determined that proposed non-hazardous line maintenance repairs and routine vegetation maintenance at power lines PN-145, 500-3 Coronado – Silverking, and 131 at specific locations where they cross the Salt and San Francisco rivers, are in close proximity to occupied southwestern willow flycatcher nesting habitat where adverse effects may occur.

The utilities have proposed to avoid the flycatcher nesting season and conduct any non-hazardous line maintenance repair and routine vegetation management in the floodplain containing occupied flycatcher breeding habitat between September 1 and April 30 (September 15<sup>th</sup> for high elevation breeding sites – near Alpine).

Specifically for SRP's PN-145 line crossing the Salt River at the east end of Roosevelt Lake, flycatcher information collected through their Roosevelt Lake Habitat Conservation Plan (SRP 2002) will be used to inform and minimize impacts of routine maintenance actions. The information will be used to schedule routine maintenance activities when the likelihood of habitat use within one or two upcoming breeding seasons is low. In other words, where feasible, SRP will conduct maintenance actions prior to lake level rise and habitat inundation in order to minimize multiple impacts to flycatcher habitat.

### **Non-hazardous line maintenance**

Non-hazardous line maintenance work is anticipated to have no effect on breeding flycatchers because of the implementation of the conservation measure of avoiding ground work in the floodplain of occupied southwestern willow flycatcher habitat during the breeding season. As a result of this conservation measure, we do not anticipate that there will be any direct effects to known nesting flycatchers, because nesting flycatchers would not be expected to be present in the area because they would have finished nesting and begun migration. We also do not anticipate alteration of flycatcher habitat to result from hazardous line maintenance repair, because this activity is focused on repair of the actual power line structures and not vegetation treatment.

Work may still occur in riparian areas throughout the breeding season where there are not known breeding sites. Therefore, due to non-hazardous line maintenance activities occurring in some riparian areas during the early and late breeding season, it is not unreasonable to anticipate that

some migrating southwestern willow flycatchers could be startled or flushed due to these activities. The likelihood of these encounters being more than a brief and/or rare occurrence is slim due to the infrequent nature of riparian vegetation treatments and the fleeting occurrence of migrating flycatchers. As a result, we anticipate that the effect from rare and short duration disturbance from non-hazardous line maintenance crews to migrating flycatchers will be insignificant.

#### Routine vegetation maintenance

Routine vegetation maintenance involves removing and pruning vegetation within the power line corridor on a cyclical basis (1 to 10 years depending on growth rates of vegetation, manpower, etc.). The routine vegetation maintenance includes treating some riparian areas by removing all tall growing plant species that could arc or grow into the conductors, or reducing fuel loading under a power line or around poles (10 foot radius around poles and 40 foot radius around tower footers). The habitat alteration would be localized within the power line ROW (maximum of 60 feet wide for the distribution line and 275 feet wide for each of the transmission lines) at a short distance since the lines span perpendicular to the river.

Routine vegetation maintenance is anticipated to have no direct effect on nesting flycatchers because of the avoidance of working near these three known nest areas (PN 145, 500-3, 131) during the breeding season.

The utilities have determined that the 131 line crossing the San Francisco River near flycatcher nesting areas does not require routine vegetation treatment. As a result, we do not anticipate that routine vegetation maintenance at the 131 line crossing along the San Francisco River (near Alpine) where occupied breeding habitat is known, will result in any direct or indirect effects.

At its closest point, current occupied flycatcher nesting habitat is 3.4 miles away from the 500-3 Coronado-Silverking line. While flycatchers can wander early and late during the breeding season and sometimes many miles away, 3.4 miles is not within the anticipated range where flycatchers acquire resources necessary for successful nesting (Cardinal and Paxton 2005). Therefore, we do not anticipate any indirect effects (i.e. alteration of nesting, foraging, or other important habitat components) to nesting flycatchers from routine vegetation maintenance along the 500-3 Coronado-Silverking line at the upper Salt River crossing.

While there is the possibility of routine vegetation maintenance causing indirect effects to flycatchers where the PN-145 line crosses the Salt River at the east end of Roosevelt Lake, we are not reasonably certain that this will occur. Known flycatcher nesting areas are 0.4 mile away from PN-145; as a result, there is currently no nesting habitat found within the corridor. Over time, we expect flycatcher habitat at PN-145 to be dynamic due to the storage of water at Roosevelt Lake causing habitat to develop and/or degrade. The influx of river sediment due to periodic flooding combined with the raising and lowering of Roosevelt Lake can alter soil conditions that can favor habitat development. Nesting habitat can develop, in optimum conditions within five years. However, we are not reasonably certain that over time, flycatcher nesting habitat will develop specifically under this power line corridor. In contrast to the vegetation specific habitat structure where nests are placed, foraging areas have less specific habitat requirements. As a result, we do believe that it is reasonable to anticipate that over time, conditions could change leading to the development of foraging habitat under PN-145. But due to the abundance of overall habitat found within the storage space at Roosevelt Lake, the

maintenance of vegetation only during the non-breeding season, the bird's natural history of adjusting to changes in conditions, and the confined area of routine vegetation maintenance to the ROW, we believe it is not reasonable to anticipate that adverse effects to flycatchers from routine vegetation maintenance at PN-145 will occur.

### **Disposal of vegetation**

For routine vegetation management in and around known flycatcher breeding sites, utilities will conduct work outside of the flycatcher breeding season. As a result, any motorized equipment or human activity associated with vegetation disposal is not anticipated to cause any effect to nesting flycatchers because birds would not be present.

Disposal of hazard vegetation is not anticipated to occur near known flycatcher nesting areas during the breeding season (approximately end of April to mid-September) due to the small likelihood of the need for hazard treatments (see analysis above). Hazard vegetation work along the 500-3 Coronado to Silverking lines at the Salt River and 131 line across the San Francisco River were described by the FS as not being needed. SRP also described that hazard vegetation treatment along the PN-145 line is unlikely to occur during the flycatcher breeding season (approximately end of April to mid-September) based on a field inspection in October 2007. As a result, we do not anticipate that any human activity or noise associated with disposal of vegetation will cause adverse affects to known breeding southwestern willow flycatchers.

### **Access route repairs**

Utilities may need to repair existing access routes following their use. While it is unknown exactly where these actions would be located, this action is believed to occur infrequently less than 6 times a year for all access routes of all lines). Because it is highly unlikely that access route repairs would be required near a flycatcher breeding site during the breeding season, effects are anticipated to be discountable.

### **Effects of Phase II activities on migrant/foraging southwestern willow flycatchers**

#### *Aerial patrols and LIDAR flights*

Because migrant flycatchers can be found on many different streams in different locations, it is not unreasonable to anticipate that a flycatcher may be briefly alerted to aircraft crossing a stream. Yet, because these transmission and distribution lines are primarily crossing flycatcher habitat in a perpendicular manner, we do not anticipate aircraft will be in and around flycatcher habitat for a very long time. As a result, any disturbance caused to migrant or foraging southwestern willow flycatchers as a result of helicopter flights is anticipated to be short in duration and intensity and would likely represent an isolated event; therefore, we anticipate the effect from any disturbance to migrant flycatchers from aerial flights/patrols to be insignificant.

#### *Ground patrols, inspections and disposal of vegetation*

It is reasonable to anticipate that when vehicles are conducting ground patrols/inspections or when on-the-ground foot crews are inspecting poles, conductors, associated hardware, and disposing of vegetation in and around riparian areas, they could briefly flush or startle a migrating or foraging flycatcher. These incidents are anticipated to rarely occur and be of short duration, because work is not anticipated to commonly occur in riparian areas and use of migratory habitat is temporary. Therefore, we anticipate that the effect from rare and short

duration disturbance from patrols, on-the-ground inspection crews, and vegetation disposal to migrant/foraging flycatchers will be insignificant.

*Hazard/routine vegetation removal and hazard/routine line maintenance repair*

Vehicle activity and ground crews conducting hazard/routine vegetation removal and hazard/routine line maintenance in and around migratory flycatcher riparian habitat may startle or surprise flycatchers during migration or foraging. These incidents are anticipated to be rare in occurrence and in short duration because treatment in riparian areas is not commonly anticipated to occur and use of migratory habitat by flycatchers is temporary. Additionally, migrant flycatchers are not nesting while using these temporary stopover locations, and while resources acquisition is important, habitat requirements are broad, and birds are not confined to a territory. Therefore, unlike breeding flycatchers, the effect from disturbance to migrant/foraging flycatchers caused by vehicles/ground crews associated with hazardous/routine vegetation removal and hazardous/routine line maintenance repair will be insignificant.

The amount of riparian vegetation that may be removed as a result of hazard/routine vegetation removal is anticipated to be minimal within riparian corridors. For example, in the FS statewide emergency consultation for hazard vegetation removal (file number 22410-2006-FE-0318), with just over 2,600 trees removed, only two were riparian tree species. Power lines in many instances cross rivers high over canyon walls where hazard/routine vegetation removal is not needed or in other places where the requirement for vegetation treatment is small. Plus, power lines typically are perpendicular to rivers, not occurring for long distances within floodplains. As a result, we do not anticipate that the few number of trees scattered throughout the state can reasonably be anticipated to cause any effect to migrating or foraging flycatchers. As a result, the effect to migrant and foraging flycatchers from hazard vegetation removal is anticipated to be insignificant.

**Southwestern willow flycatcher critical habitat**

A total of 6.9 miles and 55.4 acres of power line occur in southwestern willow flycatcher critical habitat at 23 locations (Table 4). Acres were calculated using the maximum ROW width, which is a generous estimate of the actual acres that would be treated after implementation of the proposed action. In other words, 55.4 acres are the maximum anticipated amount of critical habitat in which trees could be removed and habitat altered.

Vegetation management treatments (hazard vegetation and routine vegetation maintenance) could remove southwestern willow flycatcher critical habitat at these 23 locations where power lines cross streams (Table 4). Riparian vegetation may sometimes require treatment where vegetation poses a hazard to a power line, where vegetation could grow into or arc with a power line, where fuel reduction is needed, and where poles may be constructed in a floodplain. Vegetation removal may occur along the Verde River (10 crossings), the Little Colorado River (three crossings), the East Fork (two crossings) and West Fork (one crossing) of the Little Colorado River, Tonto Creek (2 crossings with 20 small, disjointed section of line entering the 100 year floodplain), and the Salt River (five crossings).

We anticipate that some of the primary constituent elements will be adversely affected by vegetation management treatments (hazard vegetation and routine vegetation maintenance). Specifically, removal of riparian vegetation (e.g. by cutting down and removing cottonwood,



willow, and tamarisk trees) would adversely affect primary constituent element 1a. (riparian trees and shrubs). Additionally, the vegetation structure of habitat described in primary constituent elements 1b. and 1c. would also be adversely affected by removing riparian trees and shrubs, particularly by removing larger overstory trees. We anticipate that vegetation removed in these locations would be larger tree species such as cottonwood, willow, and tamarisk.

However, at many of these areas, there is no need for hazard or non-hazard vegetation treatment in the riparian area. In some instances, power lines cross streams or rivers high enough to provide adequate clearance distance between riparian vegetation and the power line, and treatment is not needed. Adverse effects from removal/alteration of critical habitat will most likely be limited to one location of the Little Colorado River (line 62, 0.22 acre), one location of the East Fork Little Colorado River (line 62, 0.36 acre), and two locations of the Salt River (PN-145, 3.78 acres, and 500-3/Coronado – Silverking lines, 14.66 acres) for a total of 19.02 acres. There is a total of 55,296 acres of flycatcher critical habitat designated in Arizona. Therefore, the proposed actions are anticipated to affect a minimum of 0.034 percent (19.02 acres) to a maximum of 0.10 percent (55.4 acres) of the critical habitat designated in Arizona.

### **Yellow-billed cuckoo**

The yellow-billed cuckoo is a candidate species, not yet proposed for listing but is treated as a proposed species for purposes of this conference. The FS asked for a review of their proposed actions, which the FS concluded would likely adversely affect the yellow-billed cuckoo, but would not jeopardize its continued existence.

Like many candidate species, we have limited current knowledge on the actual location and habitat needs of yellow-billed cuckoos in Arizona. The most recent statewide surveys were general, occurred nearly a decade ago (Corman and Magill 2000), and were focused largely on detecting presence (not finding nesting birds). Some additional detections have occurred since. As a result, we have little current knowledge of actual cuckoo nesting locations and specific habitat requirements and/or limitations. Additionally, riparian habitat is dynamic, therefore conditions can change quickly that can improve or degrade local suitability and nesting locations of riparian birds, like the yellow-billed cuckoo.

Through examining records and querying the southwestern willow flycatcher habitat suitability model, the FS determined that suitable cuckoo nesting habitat either was present at power line crossings on Wet Beaver Creek (two crossings), West Clear Creek (one location in the floodplain that does not cross the creek), and the Verde River (two crossings); or is possibly present on Oak Creek (multiple crossings), Tonto Creek (two crossings), the Verde River (one crossing), and the Salt River (two crossings).

Proposed vegetation removal within ROW corridors could leave a short gap in continuity of riparian vegetation, but may not ultimately impact the short or long-term success of the cuckoo. Unlike some other smaller passerines, the cuckoo may require up to 15 ha (50 acres) (in California) of foraging habitat (Wiggins 2005). It is expected that foraging requirements in Arizona could be larger or smaller depending on quality of habitat and location. Therefore, if a small amount of removed vegetation does not include the nest tree; or alter more vegetation structure-specific nesting area, prey availability, or foraging habitat; and if clearing activity is not

in close enough proximity to disrupt normal nesting behavior; it may not result in adverse effects that causes a reduction in or loss of nesting success (including eggs and nestlings).

While we have an estimate of whether suitable or potential breeding habitat may persist and possible acres impacted, we do not have other site-specific information on if cuckoos were found in some areas, whether the known past detections were migrants or nesting birds, whether birds are currently present, and/or if birds were there, where nesting areas are found.

With those facts in mind, we are unable to determine with reasonable certainty whether the proposed actions associated with vegetation removal/disposal and line maintenance/repair will result in adverse effects to the yellow-billed cuckoo. Yet, we do have enough information about the cuckoo, the proposed action, and the extent of potential area impacted, in conjunction with proposed conservation measures, to agree with the FS's conclusion that this project would not jeopardize the cuckoo.

### **Aerial patrols, LIDAR flights, and ground patrols**

In both instances, the impacts of these aerial and ground-based activities are expected to be short in duration with no impact to habitat conditions. Power lines almost always are perpendicular to the streams with cuckoo habitat; visits by air or ground over or through cuckoo habitat are brief. As a result, it is anticipated that these actions, with the rare exception of potentially startling a cuckoo or causing it to briefly flush, would not be expected to cause any adverse effects. Effects from instances where birds may respond briefly to a helicopter, vehicle, or ground crew associated with aerial and LIDAR flights, and ground patrols are anticipated to be discountable.

### **Hazard vegetation removal and hazardous line maintenance repair**

Hazard vegetation removal and hazardous line maintenance repair could occur during the breeding season of cuckoos, but the need for and frequency of hazard vegetation treatments and line maintenance is anticipated to be very low. These effects would be short in duration and would occur in relatively small areas. Habitat found at West Clear Creek along the CU-06 line was pruned during Emergency Operations described in the Environmental Baseline. Because treatments just occurred, it is not certain what additional work is needed and if any future impacts may occur. Additionally, habitat at the same line crossing at the Verde River south of Camp Verde is reported to be of low density (S. Hedwall, FWS and J. Agyagos, USFS, pers. com.). The closest detection to the Verde River site was approximately 0.25 miles away. Therefore, with the habitat at the line crossing believed to be of lower quality for nesting, the only detection 0.25 miles away, and no known nesting location, we can not be certain that adverse impacts will occur to the cuckoo. The locations having suitable breeding habitat (described above) are the most likely areas where these effects might occur (the Salt River 500-3 Coronado to Silverking site will not have hazard vegetation treatments).

An estimated maximum of 58.39 acres of suitable and/or potential breeding habitat could be affected by the removal of hazardous riparian vegetation. In addition to the loss of potential or suitable breeding habitat, cuckoos could be disturbed by ground crews. Similarly, hazard line repair crews could work within those locations and could disturb breeding birds. However, as a result of our lack of knowledge on whether cuckoos actually occur in these areas, their nesting locations, persistence at these locations, the bird's fidelity to a nesting area, etc., we are unable to determine whether adverse effects are reasonably certain to occur.

**Routine vegetation maintenance and non-hazardous line maintenance treatments**

Because the utilities have proposed to avoid conducting non-hazardous vegetation and line repair treatments during the June 1 to August 30 breeding season at the locations where cuckoo nesting habitat is believed to be potentially suitable or suitable, no direct effects to breeding birds are anticipated.

An estimated maximum of 73.05 acres of suitable and/or potential breeding habitat could be affected by the removal of non-hazardous riparian vegetation. Nesting cuckoos would not be directly affected because these actions would occur in the non-breeding season. However, there is the possibility that these habitat changes could influence breeding success in future seasons. But, due to our lack of knowledge on whether cuckoos actually occur in these areas, their nesting locations, persistence at these locations, or the bird's fidelity to a nesting area, we are unable to determine with reasonable certainty whether adverse effects are certain to occur.

**Disposal of vegetation**

For disposal of vegetation from routine vegetation treatments in and around potential or suitable cuckoo breeding habitat, utilities will conduct work outside of the breeding season. As a result, any motorized equipment or human activity associated with vegetation disposal will not affect nesting cuckoos, because birds would not be present.

The effects from the disposal of hazard vegetation during the breeding season are anticipated to be linked specifically with the effects of hazard vegetation removal. The additional activity of cutting up trees and limbs with chainsaws and/or using a chipper extends the length of time potentially disturbing activities can occur near breeding habitat. However, similar to our analysis of effects from hazard vegetation removal, we do not have detailed knowledge of whether cuckoos actually occur at these locations, their nesting locations, persistence, or the bird's fidelity to a site. As a result, we are unable to determine what the effects may be from hazard vegetation disposal during the breeding season and whether adverse effects are reasonably certain to occur.

**Access route repairs**

Utilities may need to repair existing access routes following their use. While it is unknown exactly where these actions would be located, repairs would occur infrequently (between 1 to 6 times per year for all access routes of all lines). Because it is unlikely that access route repairs would be required near a cuckoo breeding site during the breeding season, effects are anticipated to be discountable.

**Loach minnow****Fossil Creek**

Within the CNF and TNF, APS power lines Flagstaff-Pinnacle Peak 1 and 2, NW-01, GD-01, IR-02, and STR-02 cross or are within the Fossil Creek watershed. Vehicle access through Fossil Creek will not occur for the APS utility lines mentioned above. Therefore, direct or indirect effects from APS vehicles will not affect loach minnow.

There are three locations where utility lines cross Fossil Creek. These three locations are greater than 2.5 miles upstream from the 2007 and 2008 loach minnow release sites. If the loach minnow population increases through future augmentation and/or natural reproduction, it is

possible loach minnow may move upstream towards the three utility line crossings where indirect effects may occur. Utility line maintenance actions will cause ground-disturbing activities within and possibly outside of the utility ROWs. These actions may result in an influx of sediment (likely to coincide with a heavy rainfall event) where the utility lines cross Fossil Creek. Utility line maintenance actions will not result in a complete removal of vegetation within the ROW; therefore, we believe the level of sediment transported to Fossil Creek from these three locations will be insignificant and indirect effects from ground-disturbing activities conducted by APS are not likely to adversely affect loach minnow.

### **Campbell Blue Creek and Blue River**

Within the ASN, NEC distribution line #131 runs parallel to and crosses occupied loach minnow critical habitat along Campbell Blue Creek and the Blue River approximately 26 times for more than 20 miles.

#### Access Roads

We identified seven roads (County Road (CR) 281, Forest Roads (FR) 281-spur, FR 281-spur H, FR 281-spur V, FR 281-spur W, FR 281-spur Y, and FR 567) that provide NEC access to distribution line #131. Along these seven roads, we identified eight creek/river crossings (or locations) where NEC will cross through occupied loach minnow critical habitat on Campbell Blue Creek and the Blue River. Along CR-281 there are two creek/river crossings (both on non-Federal land) and all other roads have one crossing (all on Federal lands). CR-281 is not restricted to use by the utilities and is used by the public year-round for access to recreational areas and private lands.

#### Federal vs. Non-Federal land

Utility vegetation maintenance activities for distribution line #131 on NFS lands require vehicle travel along CR-281 through a checkerboard of Federal and non-Federal lands. CR-281 is the primary access route and provides access to distribution line #131 through six additional FS spur roads mentioned in the access roads discussion. Because NEC must use CR-281 (and other FS spur roads) to access distribution line #131 on NFS land, NEC vehicle travel across non-Federal lands can not be avoided, as a result, effects from use of CR-281 (and other FS spur roads) through non-Federal lands are interrelated and interdependent with utility vegetation management on NFS land. Therefore, vehicle impacts on non-Federal lands are part of the action area and NEC travel through non-Federal lands is considered a Federal action when conducting utility vegetation maintenance activities on NFS lands.

In addition to vehicle travel, when NEC exclusively conducts hazard vegetation treatments, routine vegetation maintenance, maintenance of lines, hardware and structures, and other associated actions on NFS lands all NEC work is considered a Federal action. All other utility line maintenance actions that occur on non-FS lands and are within the action area are addressed in the cumulative effects section.

#### Frequency of Creek/River Crossings

The frequency of NEC's access to distribution line #131 for utility line maintenance activities will fluctuate throughout the 10-year timeframe of the proposed project. Based on the operation schedules provided in the BA we compiled a list of NEC activities that were reasonably certain to occur in any given year (see Table 7 below). After looking through each activity, we estimated the number of crossings per visit was estimated for each year and also the 10-year

project timeframe. We estimated that, at a minimum, one crossing would account for one NEC vehicle requiring access through occupied habitat to perform maintenance operations and one departure through occupied habitat. NEC activities that involve utility line repair, replacement, or treatment will likely require multiple accesses and departures and multiple vehicles for each crossing. Because the frequency of crossing and vehicles used for each visit are unknown we estimated each activity identified in Table 7 would require at least one crossing. Also, based on information provided by the FS (June 20, 2008 email) routine vegetation maintenance and line maintenance repair/replacement categories in the table below require additional visits that were not anticipated in the BA. For routine vegetation maintenance the FS estimates that two vehicles and eight weeks (at 5 days/week) are required to complete the work. And, for the major line maintenance work the FS estimates two vehicles and four weeks of work would be required.

NEC Activities = Each activity represents one Visit along line #131.		Proposed Frequency for each Visit/Activity	Estimated Number of Visits in Any Given Year	Estimated Number of Visits within 10 Years	Estimated Number of Crossings (8x2) <sup>3</sup> per Visit per Year	Estimated Total Crossings in 10-Years
Utility Vegetation Management	Vegetation Inspection Ground Patrol **	Annual 1-2 times/year	2	20	32	320
	Hazard Vegetation Ground Patrol **	Annual as needed	≥1	≥10	≥16	≥160
	Routine Vegetation Maintenance Patrol	Every 5 years	1	2	16	32
	Routine Vegetation Maintenance Treatments	Every 5 years	80 (40 for each vehicle)	160	1,280	2,560
	Hazard Vegetation Treatments	Annual 1-2 times/year	2	20	32	320
Line Maintenance	Ground Patrol **	Annual 1-2 times/year	2	20	32	320
	Hazard Patrol **	Annual as needed	≥1	≥10	≥16	≥160
	Wood Pole Inspection/Treatment	Every 10 years	1	1	16	16
	Line Maintenance Repair/Replacement	Minor-as needed	≥1	≥10	≥16	≥160
		Major-Every 10 years	40 (20 for each vehicle)	80	640	1,280
Repair of Access Routes	0-6 per year	1	2	16	32	
<b>Estimated Totals</b>			<b>132 *</b>	<b>335*</b>	<b>2,112 *</b>	<b>5,360*</b>
<p>* Totals may be greater or less than the number given depending on “as needed” and “5/10/30-year” schedules, the number of vehicles used for each activity, and the number of repeat crossings not anticipated for each visit in this consultation.  ** Many of the ground patrols are conducted concurrently rather than separate patrols so this calculation is an overestimate for ground patrols.</p>						

### Timing of creek/river crossings

For Phase II operations, NEC has identified annual, periodic (every 5 years), and long term (10 to 30 years) maintenance schedules (separated by month). The following table illustrates NEC’s activities (including timing and frequency) along with the actions that overlap with the loach minnow spawning period (March through May).

<sup>3</sup> There are a total of eight road “crossings” that provide access through Campbell Blue Creek and Blue River that NEC may use for access to distribution line #131. For each activity we anticipated that all crossings would be accessed through the entire length of line #131. Each crossing accounts for two trips (one entry and one exit) through occupied loach minnow habitat (8 crossings x 2 trips = 1 Visit).

Table 8. Operation schedule for Phase II actions and loach minnow spawning period (S), Campbell Blue Creek and Blue River, Arizona.														
NEC Activities		Frequency	Month											
			J	F	M	A	M	J	J	A	S	O	N	D
Utility Vegetation Management	Vegetation Inspection Ground Patrol	Annual 1-2 times/year			S	S	S							
	Hazard Vegetation Ground Patrol	Annual as needed			S	S	S							
	Routine Vegetation Maintenance Patrol	Every 5 years			S	S	S							
	Routine Vegetation Maintenance Treatments	Every 5 years			S	S	S							
	Hazard Vegetation Treatments	Annual 1-2 times/year			S	S	S							
Line Maintenance	Ground Patrol	Annual 1-2 times/year			S	S	S							
	Hazard Patrol	Annual as needed			S	S	S							
	Wood Pole Inspection/Treatment	Every 10 years			S	S	S							
	Line Maintenance Repair/Replacement	Minor-as needed Major-Every 10 years			S	S	S							
	Underground Line Maintenance	Repair-5 yrs Replace-30yrs Other-as needed	<i>No underground lines occur within the affected portions of loach minnow habitat or watersheds.</i>											
Repair of Access Routes		Occurrence 0-6 times/year			S	S	S							

\* The dark shaded portions of the table indicate the month of the year when NEC activities may occur. The lighter shaded portions of the table indicate no activities scheduled by NEC. The cells marked with an "S" indicate the spring spawning season for loach minnow.

### NEC creek/river crossings

NEC Phase II operations along distribution line #131 include ROW access that may require utility vehicles to cross occupied loach minnow habitat in Campbell Blue Creek and the Blue River. These low-water crossings provide the shallow, swift water over gravel, cobble and rubble substrates suitable for loach minnow (Rinne 1989, Propst and Bestgen 1991) and also the spaces and substrate necessary for spawning (Prospt *et al.* 1988, Rinne 1989). Table 8 above shows that the majority of actions (except for vegetation inspection ground patrol and line maintenance ground patrol) may occur at any time of year along the 20-mile section of road. Because loach minnow have been documented within Campbell Blue Creek and the Blue River throughout the 20-mile section of road within the past 20 years (1988 through March 2008 survey and collection data), loach minnow are susceptible to mortality when NEC vehicles access the eight low-water crossings identified above.

More importantly, all NEC actions have potential to occur within the loach minnow spawning period (March through May). During this time the eggs are fixed to the underside of rocks making them susceptible to crushing; therefore, direct impacts to loach minnow and eggs from vehicles crossing occupied streams could occur at any time during the spawning period. The two activities with potential to cause the majority of impacts to loach minnow are vehicles associated with routine vegetation maintenance (at 1,280 crossings) and major line maintenance work (at 640 crossings) during the spawning season (Table 7). These effects are likely to result in

mortality to loach minnow and eggs as a result of NEC vehicles crossing seven stream sections along the Blue River and one crossing along Campbell Blue Creek.

Loach minnow may be adversely affected by increased sediment deposition on the stream bottom. Adverse effects of stream sedimentation to fish and fish habitat have been documented (Murphy *et al.* 1981, Wood *et al.* 1990, Newcombe and MacDonald 1991, Barret 1992, Megahan *et al.* 1992). Because of their benthic habit, loach minnow and their eggs are particularly vulnerable to substrate sedimentation. Considering the number of vehicle/stream crossings that are identified for routine vegetation maintenance and major line maintenance, loach minnow and their eggs are more susceptible to substrate sedimentation from NEC vehicle crossings during the spawning period. Physical habitat alteration or disturbance associated with vehicles crossing the creek/river within the 10-year timeframe for this project is likely to occur. Although the number of crossings within the creek/river (shown in Table 7) is high, the area of direct effects will be localized and limited to the vehicle impact area and immediate downstream areas.

### **Vegetation removal or pruning**

At this time the currently managed corridor for distribution line #131 is not wide enough to meet the clearance needs for this utility line. Within the next 10 years, NEC plans to clear the corridor to meet the width of the permitted ROW. Removal or pruning of vegetation in riparian areas can indirectly modify habitat for loach minnow through the reduction of large shade trees and vegetation. Increasing solar radiation in shallow streams can result in a localized reduction in stream benthic communities (Kelly *et al.* 2003) upon which loach minnow relies for food. Aerial photos of the riparian areas along distribution line #131 were reviewed by the FS. The FS noted a riparian vegetation deficit and a lack of mature riparian forest to provide large shade trees. Therefore, we believe that adverse effects from vegetation removal or pruning in riparian areas along Campbell Blue Creek and the Blue River are not likely to occur as few trees will likely need to be removed or pruned to meet the width of the permitted ROW.

The BA describes the impact of disposal of vegetation within the watershed will have minimal effects to loach minnow and the implementation of conservation measures will further reduce any potential effects. Disposal could be beneficial if the disposition of vegetation is used to assist in soil retention. We believe the negative effects of vegetation disposal within the utility corridors along Campbell Blue Creek and Blue River are insignificant, and that beneficial effects to any loach minnow habitat may occur through soil retention.

### **Loach minnow critical habitat**

The effect of vehicles crossing Campbell Blue Creek and the Blue River will result in direct effects to primary constituent element 1. This primary constituent element describes the importance of living areas for adult, juvenile, and larval loach minnow and spawning areas with appropriate water levels, flows, and substrates. The weight of vehicles crossing sections of the creek and river will contribute to the continued compaction and disruption of suitable spawning habitat for loach minnow. Although the potential impact areas are localized, the number of potential crossings (5,360) combined with the timing of these actions (March through May spawning period) will adversely affect this constituent element.

The FS concluded in the BA that Phase II operations are likely to adversely affect primary constituent elements 2 and 3. We have not concluded that the effects of the proposed action will

impede natural flows or periodic flooding that maintain sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness; however, there is a potential for increased substrate embeddedness in areas downstream of road crossings following use of these areas by NEC vehicles, which can result in disturbance of sediment at the road crossings. Disturbed sediments will then become entrained in the water column and settle in downstream areas which could potentially impact the prey base. Based on the current riparian vegetation conditions (vegetation deficit and lack of mature riparian forest) described by the FS along the Campbell Blue Creek and Blue River, we do not believe the removal or pruning of vegetation along distribution line #131 utility corridor will alter the current temperatures in the creek or stream or the abundance of aquatic insects. The removal of vegetation along power lines will benefit the area by reducing the arcing potential and the risk of trees falling on power lines and igniting fires.

### **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.

#### **Mexican spotted owl**

Future non-Federal activities within the action area that are reasonably certain to occur include the modification of habitat and disturbance from actions occurring on adjacent ownerships and inholdings (e.g., road construction, land clearing, logging, fuelwood gathering, recreation). These activities may reduce the quality and quantity of MSO nesting, roosting, and foraging habitat; result in disturbance to breeding MSOs; and contribute as cumulative effects to the proposed action. However, because MSOs occur predominantly on Federal lands, and because of the role of the respective Federal agencies in administering MSO habitat, actions implemented in the future by non-Federal entities on non-Federal lands are considered to be of minor impact to the overall MSO population, but may have significant impacts on individual MSO PACs and critical habitat.

#### **Southwestern willow flycatcher**

Future non-Federal activities within the action area that are reasonably certain to occur include: power line clearing, road and bridge projects, agricultural land uses and runoff, livestock grazing, recreation, land clearing and development, water diversions, and groundwater pumping on non-Federal land. These activities may reduce the quality and quantity of flycatcher nesting, foraging, and migration habitat; result in disturbance to breeding flycatchers; and contribute as cumulative effects to the proposed action.

#### **Yellow-billed cuckoo**

Future non-Federal activities within the action area that are reasonably certain to occur, which could impact cuckoos include: power line utility maintenance actions on, road and bridge projects, agricultural land uses and runoff, livestock grazing, recreation, land clearing and development, water diversions, and groundwater pumping on non-Federal lands. These activities



may reduce the quality and quantity of cuckoo nesting, foraging, and migration habitat; result in disturbance to breeding cuckoos; and contribute as cumulative effects to the proposed action.

### **Loach minnow**

Future non-Federal activities within the action area that are reasonably certain to occur, which could impact loach minnow include: recreation, utility line maintenance activities (as described in the proposed action), road maintenance, vehicle stream crossings, agricultural runoff, livestock grazing, land clearing and development, forest fuel reduction, and water diversions and groundwater pumping on non-Federal lands. These activities may reduce the quality and quantity of loach minnow habitat.

## **CONCLUSION**

### **Mexican spotted owl and critical habitat**

After reviewing the current status of the MSO and its critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that implementation of the “Phase II Maintenance in Utility Corridors on Arizona Forests” will not likely jeopardize the continued existence of the MSO, and is not likely to destroy or adversely modify designated critical habitat of the species.

We present this conclusion for the MSO for the following reasons:

- Though treatments in critical habitat may result in the reduction and/or loss of some primary constituent elements, and treatments in protected and restricted habitat may reduce key habitat components, the proposed action will increase the long-term viability of MSO habitat by reducing the threat of a severe, stand-replacing wildfire starting along utility corridors on NFS lands.
- The implementation of the proposed action is not expected to impede the survival or recovery of MSO within the Basin and Range West, Colorado Plateau, and Upper Gila Mountains Recovery Units. The proposed project includes approximately 3,914 acres of critical habitat. Due to the relatively small size of the area in comparison to the 3.2 million acres of critical habitat designated on FS lands, the impacts to primary constituent elements will not appreciably reduce the value of critical habitat for the species’ conservation, and will not rise to the level of destruction or adverse modification.
- While large dbh trees and snags will be removed by the proposed actions which may result in short-term disturbance and loss of primary constituent elements, we do not believe it will destroy the habitat for use by MSO or their prey species.

### **Southwestern willow flycatcher and critical habitat**

After reviewing the current status of the southwestern willow flycatcher and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that implementation of the “Phase II Maintenance in Utility Corridors on Arizona Forests” as proposed, will not likely jeopardize the

continued existence of the southwestern willow flycatcher, and is not likely to destroy or adversely modify designated flycatcher critical habitat.

We present this conclusion for the southwestern willow flycatcher for the following reasons:

- Impacts to breeding flycatchers will occur at two sites over a 10-year period by disturbance activities associated with Phase II hazardous line maintenance. This is anticipated to occur at a very small proportion (1.7%) of the current 117 known breeding sites within Arizona, and a smaller proportion (0.7%) of the known sites rangewide.
- Impacts are anticipated to be as a result of indirect disturbance to the success of nesting attempts, and are not anticipated to alter the vegetation composition of existing sites.
- Impacts are anticipated to adversely affect an unknown (but small number of flycatcher pairs) at two sites over an estimated total of approximately 5.5 acres of habitat. There are an estimated 495 territories in Arizona and estimated 1214 territories rangewide; as a result, a few territories at each site would represent approximately one percent or less of these statewide and rangewide populations.
- Conservation measures associated with non-hazardous vegetation removal and line repair will limit potential impacts to flycatchers by avoiding direct effects during the breeding season.
- Critical habitat will be affected at a maximum of 23 power line crossing locations, but the maximum amount of total vegetation that could be impacted across Arizona is relatively small. None of the locations parallel designated critical habitat, but go across the stream or enter the 100-year floodplain in short sections reducing the amount of vegetation impacted. The minimum amount of vegetation removed is anticipated to be 0.034 percent (19.02 acres) to a maximum of 0.10 percent (55.4 acres) of the total critical habitat designated in Arizona. As a result of the small amount of vegetation impacted at each location, we believe that critical habitat would remain functional to serve the intended conservation role for the flycatcher.

### **Yellow-billed cuckoo**

After reviewing the current status of the yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that implementation of the “Phase II Maintenance in Utility Corridors on Arizona Forests” as proposed, will not likely jeopardize the continued existence of the yellow-billed cuckoo.

We present this conclusion for the yellow-billed cuckoo for the following reasons:

- The range of the cuckoo extends across the western United States; as a result the maximum removal of approximately 70 acres of potential cuckoo habitat, represents a minute portion of available habitat within Arizona and rangewide.

- The manner in which habitat is removed also minimizes its potential effect to cuckoos. The potential habitat removal is spread across eight locations and mostly is a narrow width of habitat removed at each location.
- Arizona may contain the most abundant populations of yellow-billed cuckoos in the western United States, with over 400 detections in 1999. The potential effects at 8 locations, representing approximately 70 acres, are a very small portion of this population.
- Conservation measures associated with non-hazardous vegetation removal and line repair will limit potential impacts to cuckoos by avoiding direct effects during the breeding season.

### **Loach minnow and its critical habitat**

After reviewing the current status of loach minnow and its designated critical habitat, the environmental baseline for the action area, the effects of the Phase II proposed action and the cumulative effects, it is our biological opinion that implementation of the Phase II action, as proposed, is not likely to jeopardize the continued existence of the loach minnow, and is not likely to destroy or adversely modify designated critical habitat for loach minnow.

We present this conclusion for the loach minnow and its critical habitat for the following reasons:

- Within the action area, CR-281 and other FS classified roads follow and provide access across Campbell Blue Creek and the Blue River. These roads are frequently used by the public year-round and regardless of road use, the loach minnow population continues to persist. Therefore, approximately 5,360 crossings across eight stream locations administered by NEC are not likely to jeopardize the population or species as a whole.
- The effects to critical habitat along the Campbell Blue Creek and Blue River are limited to existing road crossings where loach minnow are found above and below the impact area. Other than road crossings, primary constituent elements for loach minnow critical habitat remain unaffected by the proposed action.
- Conservation measures associated with the reduction of vehicle numbers, vehicle trips, and vehicle speed through low water crossing will limit the potential impacts to loach minnow by minimizing effects to individuals and habitat.

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

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 that were 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.

The measures described below are non-discretionary, and must be undertaken by the Forest so that they become binding conditions of any grant or permit issued to the appropriate utility, 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 appropriate utility 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

For the purposes 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 the alteration of habitat that affects behavior (i.e. breeding or foraging) of birds to such a degree that essential behaviors are impaired, and the birds are 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.

In past Biological Opinions, we used the management territory to quantify incidental take thresholds for the MSO (see Biological Opinions provided to the Forest Service from August 23, 1993 through 1995). The current section 7 consultation guidance provides for incidental take if an activity compromises the integrity of a PAC. Actions outside PACs will generally not be considered to result in incidental take of owls, except in cases when areas that may support owls have not been adequately surveyed and we are reasonably certain incidental take could occur. This policy was defined in a July 1, 1996, FWS memo titled “Conducting Section 7 Consultation on Mexican Spotted Owls and Critical Habitat – Policy” and is supported by the information compiled in the Recovery Plan (USDI 1995) and supporting material.

Using available information as summarized within this document, we have identified conditions of possible incidental take for the MSO associated with the proposed action within the following 16 PACs: 010115, 010616, and 010613 on the ASNF; 040512, 040541, 040734, 040705, 040712, and 040205 on the CNF; 120403, 120506, and 120419 on the TNF; and 090305, 090306, 090314, and 090302 on the PNF. Based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished by the FS, take is anticipated for the MSO as a result harm and/or harassment from the following actions:

- Vegetation removal actions that modify key habitat components and may result in degraded nesting, roosting, and foraging habitat (except PAC 040734). The modification of key habitat components in PAC 040734 is not expected to modify or degrade nesting or roosting habitat in this PAC as the portion of the PAC that includes the utility line does not include nesting or roosting habitat.
- The potential for multiple (up to six or seven) flights along utility corridors each year during the breeding season over PACs. Low altitude helicopter flights may result in temporary disturbance to owls that could result in flush responses or decreased prey delivery/feeding.
- Ground patrols or inspections during the breeding season in PACs that result in flush responses from nests or roosts.
- Hazard removal and disposal of vegetation during the breeding season within or near MSO PACs, causing disturbance to owls that could result in flush responses or decreased prey delivery/feeding.

We anticipate that the incidental take of MSO will be difficult to detect because finding a dead or impaired specimen is unlikely. Incidental take can be anticipated by short-term impacts from disturbance and/or permanent habitat modification within PACs that will affect the reproductive success and survival of MSO within the project area. We anticipate harm to MSO from removing key nesting, roosting, and foraging habitat components from vegetation removal activities. We also anticipate harassment to MSO breeding, feeding, and sheltering due to disturbance from the combination of effects caused by aerial patrols, ground patrols, and vegetation removal/disposal activities.

We anticipate the incidental take of one pair of MSOs (and/or associated eggs/juveniles) in the form of harm and/or harassment at each of the 16 PACs. Twelve PACs are located in the Upper Gila Mountains RU (#010115, 010616, 010613, 040512, 040541, 040734, 040205, 040712, 040705, 120403, 120506, 120419) in the ASNF, CNF, and TNF, and four PACs are located on the PNF in the Basin and Range West RU (#090305, 090306, 090314, 090302). Incidental take is anticipated to occur at least once in each PAC over the course of the project due to habitat modification and disturbance associated with the combination of aerial and ground patrols, and vegetation removal along utility corridors over the course of this 10-year proposed action. This anticipated take may be short-term disturbance (short-term disturbance is defined as one to three breeding seasons of non-habitat altering action that disrupts or is likely to disrupt owl behavior), permanent habitat modification along the utility corridors within the PACs, or a combination of disturbance and habitat modification.

The MSO within the 16 PACs identified above are anticipated to be incidentally taken at least once by the proposed action over the next 10 years. Due to the establishment of these PACs; the importance of these areas for MSO breeding, feeding, and sheltering; and the current quality of forested habitat within these PACs, the combination of vegetation management and other disturbing activities occurring along those power lines within or adjacent to the PACs, are likely to result in the incidental take of MSO associated with these areas. While it is possible that incidental take could occur to owls associated with the other 62 PACs within the action area, it is difficult to predict where impacts from the proposed action may actually occur in order to anticipate incidental take with any reasonable certainty. Incidental take identified with this action will be confirmed and/or modified by yearly reports. Though we have attempted to clearly identify the PACs where incidental take is expected, the scale and temporal components of this project do not allow for a precise accounting of exactly which owls may be taken by the proposed action. However, if yearly reports indicate that incidental take may differ from the 16 PACs named above, we will work with the FS to determine whether we need to modify the list of PACs where incidental take of MSO actually occurred or whether reinitiation is necessary.

### **Southwestern willow flycatcher**

We anticipate that if proposed hazardous line repair activities occur during the southwestern willow flycatcher breeding season (May 1 to August 30 at PN-145, May 1 to September 15 at line 131), they will harass breeding southwestern willow flycatchers near PN-145 along the Salt River at the east end of Roosevelt Lake and one pair at line 131 along the San Francisco River near the Town of Alpine. Breeding flycatchers have been regularly detected at these locations.

We estimate that because 1) hazardous line repair actions can occur any time, 2) equipment is expected to last 30 to 60 years, 3) installation errors and/or faulty equipment can escalate need for repair and/or reduce longevity of equipment, and 4) this project is proposed for 10 years, we can not expect hazard repairs to occur more than twice at each location.

Line repair work would occur within approximately a 3.78-ac area at PN-145 (Salt River at east end of Roosevelt Lake) and a 1.58-ac area (line 131 along San Francisco River near the Town of Alpine).

Vegetation patch size and shape that flycatchers use for nesting can vary from 0.25 ac to 175 ac (USFWS 2002). Mean reported size of breeding patches was 21.2 ac (USFWS 2002). Mean patch size of breeding sites supporting 10 or more flycatcher territories was 62.2 ac (USFWS 2002). Based upon the number of flycatcher territories reported in each patch, it required an average of 2.7 ac for each territory in a patch (USFWS 2002). To clarify, these are generalizations across the subspecies range, and because breeding patches include areas that are not actively defended as territories, these numbers do not equate to average territory size (USFWS 2002).

These variations in the size of breeding patches used by flycatchers and the number of nesting flycatchers within a patch of habitat makes it impossible to predict exactly how many pairs of flycatchers will be nesting at these locations. The dynamic aspect of habitat conditions and annual fluctuations in breeding bird numbers, combined with not knowing which season actions will occur causes additional challenges.

As a result, we can not quantify exactly how many breeding flycatchers will be taken at each location. Yet, because the area at each work location is relatively small; we do not anticipate there will be more than a few territories at each site. And because these areas are relatively small, we anticipate that all breeding attempts (including nestlings/eggs) will be harassed and incidentally taken when hazardous line repair activities occur during the breeding season.

Therefore, due to the unpredictable, but typically infrequent nature of hazardous line repair, a maximum of two events per site over the 10-year project is anticipated to incidentally take all breeding southwestern willow flycatchers at the PN-145 and line 131 sites. The harassment of all pairs of breeding flycatchers at each of the two sites (i.e. preventing nest construction, flushing from nest/eggs, abandoning eggs and/or nestlings, leaving nest and exposing eggs/young to predators, disturbance while selecting mates, disturbance while foraging, etc.) from ground crews, equipment, and generated noise for extended periods of time is anticipated to prevent nesting, cause failure of nesting attempts with eggs/young, and/or a reduced number of clutches laid/eggs laid/young hatched/young fledged.

Incidental take will be considered to have been exceeded if work occurs in more than a 3.78-ac area at the PN-145 location and a 1.58 ac area at the line 131 location or if hazardous line repair occurs more than twice at any of these two locations during the flycatcher breeding season over the 10-year life span of this consultation.

### **Yellow-billed cuckoo**

Even if the species were listed, we are unable to anticipate with reasonable certainty that proposed actions associated with the “Phase II Maintenance in Utility Corridors on Arizona Forests” would have resulted in the incidental take of yellow-billed cuckoos.

The yellow-billed cuckoo is a candidate species, but is being treated as a proposed species for this conference, and as a result, section 9 violations of the Act do not apply. We base this conclusion on the following:

- We have no site-specific data to determine, with reasonable certainty, that yellow-billed cuckoos are found nesting at power line ROWs crossings associated with this proposed action.
- The FS and utilities have proposed measures that could limit the potential direct effects to yellow-billed cuckoos.

### **Loach minnow**

Take in the forms of harm and/or harassment resulting in habitat modification and injury or death of eggs and loach minnow are reasonably certain to occur, as explained in the effects of the action. However, we anticipate incidental take of loach minnow will be difficult to detect for the following reasons:

- The uncertainty of “as needed” and “5/10/30-year” utility line maintenance schedules, the number of vehicles used for each activity, and the number of repeat crossings for Phase II actions limits our ability to predict the potential for fish and/or eggs to be present.

- The number of other vehicles using the road crossings makes it difficult to determine take that is specific to the crossing of NEC vehicles.
- Dead or impaired individuals are difficult to find due to their small size and the likelihood for carcasses to be carried downstream or scavenged.

Therefore, we can not quantify the amount of direct take that will occur from NEC vehicles associated with this proposed action. Loach minnow continue to persist in the action area in the presence of ongoing road crossings by the public, and over a ten-year period we anticipate only a small increase in use of the road by NEC.

Because incidental take of loach minnow will be difficult to detect, we describe incidental take in terms of habitat conditions, and use surrogate measures to identify when take has been exceeded. We anticipate that take will occur at each of the eight road crossings including habitat downstream of each road crossing on the Blue River and Campbell Blue Creek because: 1) cavities between cobble in which eggs are laid will be compressed; 2) cavities between cobble in which loach minnow seek shelter will be compressed; 3) cavities between cobbles in areas downstream of road crossings will be filled with sediment that becomes entrained in the water column following vehicle crossings; and 4) adult, juvenile, and larval loach minnow present in the stream at the road crossing at the time that vehicles cross may be crushed and their habitat will be disturbed, resulting in temporary displacement that is disruptive to their ability to feed and find adequate shelter.

Incidental take is associated with eight road crossings and will include up to 2,112 stream crossings on the Blue River and Campbell Blue Creek during the loach minnow spawning period, the impact area of NEC vehicles crossing the Blue River and Campbell Blue Creek, and the volume of sediment that is anticipated to occur in the immediate downstream area following vehicle crossings.

The FWS 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.

## **EFFECT OF THE TAKE**

In this biological opinion, the FWS determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

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

### **Mexican spotted owl**

The FS and utilities have included in their proposed action all measures that we believe are reasonable and prudent in order to reduce and minimize effects (see Conservation Measures, page 13). Therefore, no additional reasonable and prudent measures or terms and conditions are



included in this incidental take statement. The FS has also committed to provide the FWS with an annual report summarizing utility vegetation management activities identified above for which incidental take is anticipated (Appendix D).

### **Southwestern willow flycatcher**

The FS and utilities have included in their proposed action all measures that we believe are reasonable and prudent in order to reduce and minimize effects (see Conservation Measures, page 13). Therefore, no additional reasonable and prudent measures or terms and conditions are included in this incidental take statement. The FS has also committed to provide the FWS with an annual report summarizing utility vegetation management activities identified above for which incidental take is anticipated (Appendix D).

### **Loach minnow**

The FS and utilities have included in their proposed action all measures that we believe are reasonable and prudent in order to reduce and minimize effects (see Conservation Measures, page 13). Therefore, no additional reasonable and prudent measures or terms and conditions are included in this incidental take statement. The FS has also committed to provide the FWS with an annual report summarizing utility vegetation management activities identified above for which incidental take is anticipated (Appendix D).

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 FS must immediately provide an explanation of the causes of the taking and review with the Arizona Ecological Services Office 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 in handling dead specimens to preserve the biological material in the best possible state.

If possible, the remains of intact species shall be provided to this office. If the remains of the species are not intact or are not collected, the information noted above shall be obtained and the carcass left in place. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should the treated species survive, the AESO should be contacted regarding the final disposition of the animal.

## CONSERVATION RECOMENDATIONS

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 owl**

1. We recommend that the FS work with us to determine if additional acreage may need to be added to PACs bisected by utility corridors.
2. We recommend that the FS work with us and the utilities to minimize the effects of utility corridor management on listed species and their habitats.
3. We recommend that the FS conduct surveys for the next five years in all PACs impacted by utility corridors in order to determine nest core areas and potential effects of vegetation management in the utility corridors.
4. We recommend that the FS work with us to plan and implement actions to improve and create MSO habitat across the national forests in Region 3.

### **Southwestern willow flycatcher**

1. We recommend that the FS continues to emphasize improving the distribution of nesting southwestern willow flycatchers throughout NFS lands, especially at high elevation habitat by improving the abundance and quality of preferred native habitat.
2. We recommend the FS continue to conduct surveys throughout the Forests and action area in areas of suitable habitat to determine the distribution and abundance of southwestern willow flycatchers.
3. We recommend that the FS and the utilities continue to re-evaluate the status of the species, the potential effects of their project, and the re-initiation criteria described at the end of this biological opinion.

### **Yellow-billed cuckoo**

1. We recommend the FS conduct searches throughout the Forests and action area in areas of suitable habitat to determine the distribution, abundance, and nest locations of yellow-billed cuckoos.
2. We recommend the FS continue to cooperate with agencies to conduct research to understand vital yellow-billed cuckoo habitat requirements, site fidelity, response to changing habitat conditions, home range, foraging strategies, and other important life history information that would contribute to the management and recovery of their habitat and analysis of potential effects from proposed projects.

3. We recommend the FS work with USGS at Northern Arizona University to help develop a model to predict the presence and suitability of cuckoo nesting habitat specific.

### **Loach minnow**

1. We recommend that ANF evaluate the use of Forest roads crossing the Campbell Blue Creek and Blue River and potential effects to listed fish species and their habitat.
2. We recommend that ANF monitor loach minnow occupancy and habitat where FS or authorized roads cross the Campbell Blue Creek and Blue River in order to determine the potential effects of road use on loach minnow and its habitat. Blocknetting downstream of road crossings during periods of use might facilitate an understanding of fish mortality caused by vehicle crossings. Similarly, surveying in-stream road beds at crossings during the breeding season might provide valuable data on the use of these areas by spawning fish.

### **REINITIATION NOTICE**

This concludes the formal and conference opinion for the special use permit for Phase II Vegetation Management Activities as outlined by the Forest Service. You may ask the FWS to confirm the conference opinion for the yellow-billed cuckoo as a biological opinion issued through formal consultation if the cuckoo is listed or critical habitat is designated. The request must be in writing. If the FWS reviews the proposed action and finds there have been no significant changes in the action as planned or in the information used during the conference, the FWS will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary.

After listing as threatened or endangered and any subsequent adoption of this conference opinion, the Federal agency 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 the species in a manner or to an extent not considered in the conference opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the species that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action.

This also concludes formal consultation on Phase II Vegetation Management Activities outlined in the FS 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 FS efforts to identify and minimize effects to listed species from this project. For further information please contact Greg Beatty at (602) 242-0210 (x247) or Brenda Smith at (928) 226-0614 (x101).

Please refer to the consultation number, 22410-2007-F-0365, in future correspondence concerning this project.

Sincerely,

/s/Debra Bills for

Steven L. Spangle  
Field Supervisor

cc: Field Supervisor, Fish and Wildlife Service, Albuquerque, NM  
Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff, AZ  
Bobbi Barrera, Southwestern Regional T&E Biologist, Albuquerque, NM  
Ron Maes, Southwestern Regional Aquatics Biologist, Albuquerque, NM  
Forest Supervisor, Apache-Sitgreaves National Forest, Springerville, AZ  
Forest Supervisor, Coconino National Forest, Flagstaff, AZ  
Forest Supervisor, Prescott National Forest, Prescott, AZ  
Forest Supervisor, Kaibab National Forest, Williams, AZ  
Forest Supervisor, Tonto National Forest, Phoenix, AZ  
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Habitat Specialist, Arizona Game and Fish Department, Region 1, Pinetop, AZ  
Habitat Specialist, Arizona Game and Fish Department, Region 2, Flagstaff, AZ  
Habitat Specialist, Arizona Game and Fish Department, Region 3, Kingman, AZ  
Habitat Specialist, Arizona Game and Fish Department, Region 6, Mesa, AZ

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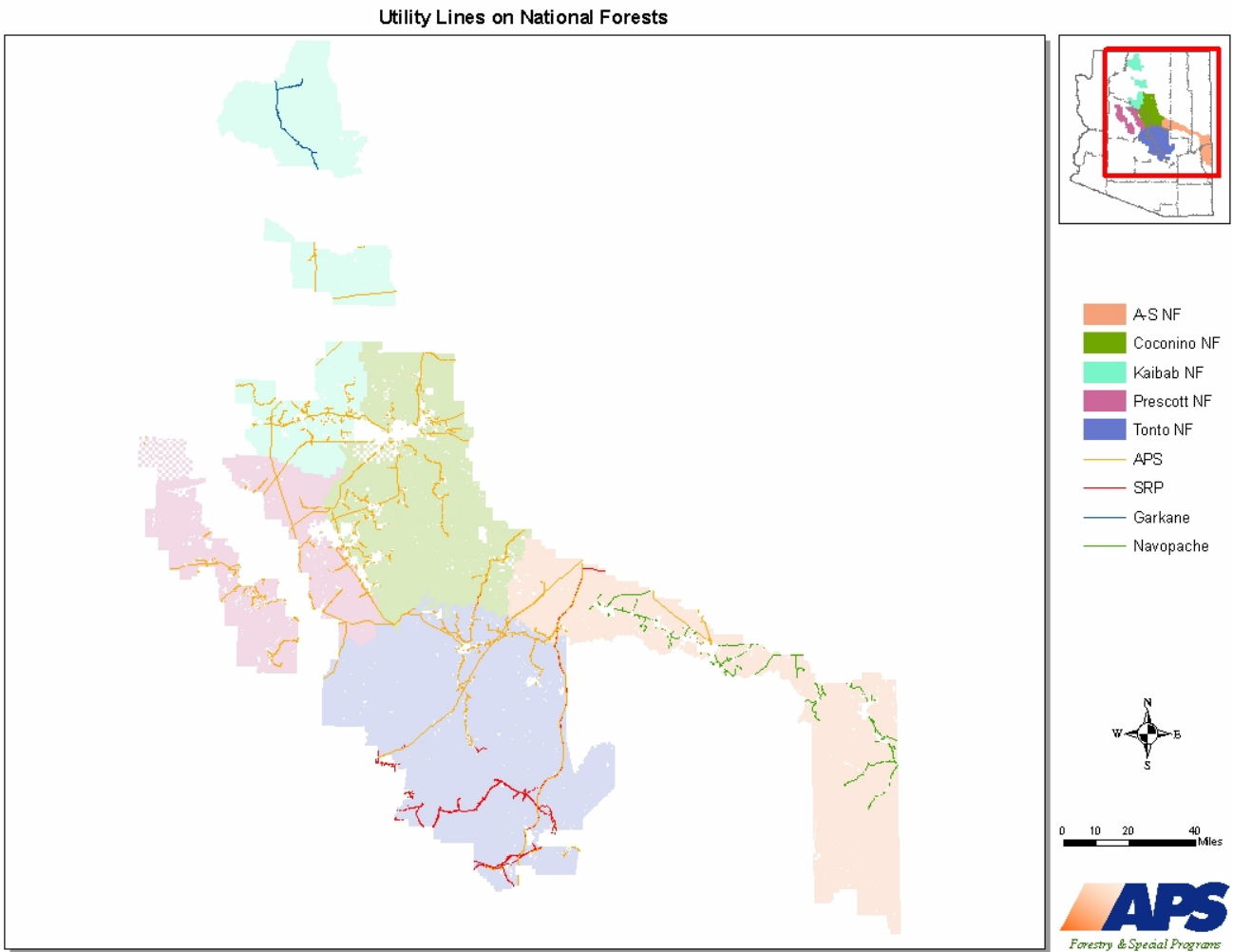
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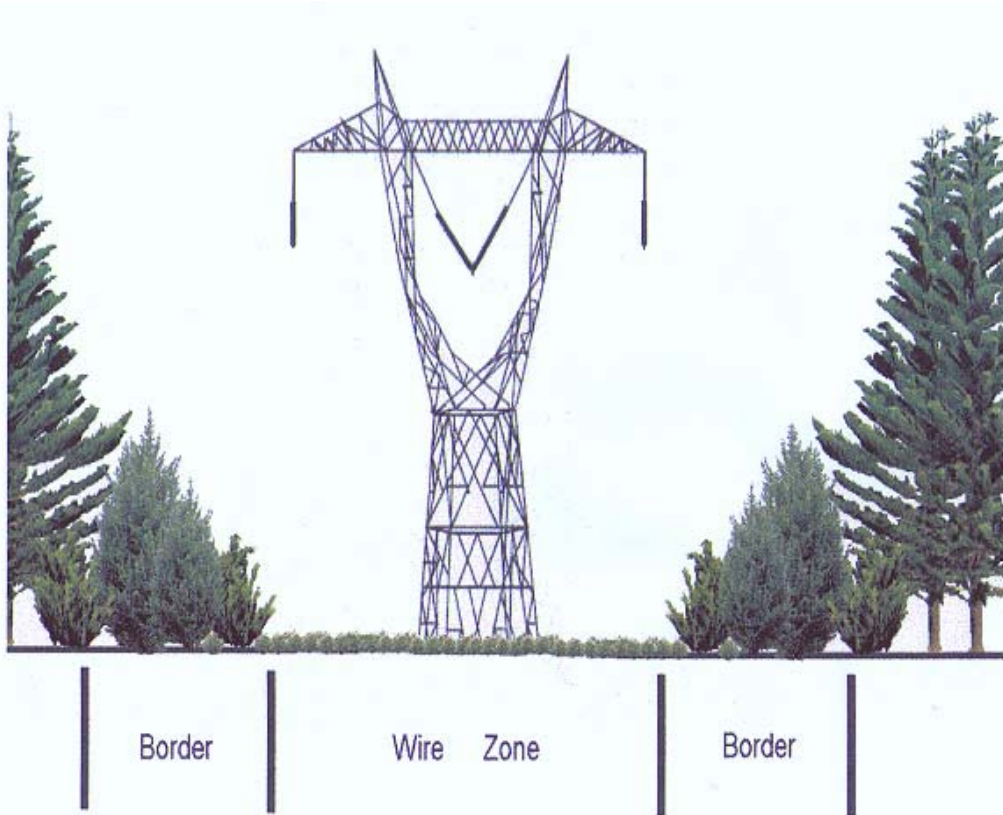
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### FIGURES

**Figure 1. Overview Map of Project Area: Utility Lines and Forest Boundaries**



**Figure 2. Representation of Wire Zone Border Model (a general description of a typical ROW consisting of the powerline corridor and immediate bordering lands)**



\*See Table 1 for line voltage and corresponding ROW widths.

## APPENDIX A

This appendix contains our concurrences with your “may affect, not likely to adversely affect” determinations for the endangered lesser long-nosed bat, endangered California condor, threatened Apache trout, endangered Gila chub and its critical habitat, endangered Gila topminnow, threatened Little Colorado spinedace and its critical habitat, endangered razorback sucker and its critical habitat, threatened spikedace and its critical habitat, and the threatened Chiricahua leopard frog. In addition, this appendix also contains your “not likely to jeopardize determinations” for the experimental, non-essential population of Colorado pikeminnow, Mexican gray wolf, and California condor. We base these concurrences on the following:

### Apache trout

- No direct effects to Apache trout will occur from hazard vegetation removal and/or associated activities. Most Apache trout streams do not have any utility lines within their watersheds or are a considerable distance (3 to 16 miles) from any existing utility lines. In addition, there are no low-water crossings that will be utilized to access the utility lines that cross either currently occupied habitat (Hannagan Creek) or soon to be occupied habitat (West Fork and East Fork of Little Colorado River).
- Indirect effects resulting from the removal of vegetation near Apache trout habitat will be insignificant. Ground disturbing activities from mechanical treatments will be limited near Hannagan Creek (600-3,500 foot buffers established) and the West and East Forks of the Little Colorado River (300-500 foot buffers established), and we do not expect hazard vegetation removal in these areas to move sediment or alter hydrologic conditions.
- General Best Management Practices will be implemented to prevent erosion due to the proposed action and to address the spread of noxious weeds.

### Bald eagle

- To minimize and avoid impacts from ground-related patrols and inspections, APS and SRP will implement a 500-foot breeding season buffer around occupied bald eagle nests. APS and SRP will coordinate with the Arizona Game and Fish Department Bald Eagle Management Program for information regarding the current nests being used by eagles to determine which sites should be avoided by 500 feet. Because bald eagles have large territories, it is not unreasonable to anticipate that over the 10-year time period of this project that ground-based patrols/inspections could periodically disrupt bald eagle behavior (i.e. flushing from perch, etc.) greater than 500 feet from the nest area. Because these instances are expected to be rare in occurrence (based upon the infrequent patrols/inspections by the utilities) and consist of trips short in duration, we anticipate the effect of these rare encounters will be insignificant. Therefore, any affects from ground-based inspection activities (walking or driving and visually inspecting the line) to nesting bald eagles is expected to be insignificant.



- All potential hazard vegetation removal activities in bald eagle territories are greater than 0.25 mile from any known nest. Additionally, because of the lack of tall desert vegetation requiring treatment, there is not the expected need for hazard vegetation removal within bald eagle territories. At the two most likely locations for hazard vegetation removal (Lynx and Sheep breeding areas), the areas where treatment may be needed are greater than 1,350 feet from the known nest area. Due to the small chance that hazard vegetation treatment is needed, the short time it normally takes to address hazards (less than a day), and the distance between hazards and known nests, we do not anticipate removal of hazard vegetation will adversely affect breeding or foraging eagles, and therefore conclude that hazard vegetation treatment are insignificant and discountable.
- Aerial flights (patrols, reconnaissance, LIDAR) will not occur within a 1,000-foot lateral and vertical buffer surrounding occupied bald eagle nests during the breeding season (December 1 – June 30). APS and SRP will coordinate with the Arizona Game and Fish Department Bald Eagle Management Program for information regarding the current nesting status of each desert nesting bald eagle breeding area to determine which sites should be avoided. Flights may occur within the 1,000-foot avoidance zone if the agencies confirm that no breeding activity is occurring or the pair has completed nesting for the season. Therefore, no adverse effects to nesting bald eagles from aerial flights are anticipated.
- In order to minimize disturbance to eagles during the breeding season from routine vegetation maintenance, APS and SRP will coordinate with the Arizona Game and Fish Department Bald Eagle Management Program for information regarding the current nests being used by eagles to determine which sites should be avoided for routine vegetation maintenance during the bald eagle breeding season. Therefore, it is expected that adverse effects due to disturbance from ground-based routine vegetation maintenance to desert bald eagles can be avoided, and any rare disruption of eagle behavior caused by treatments are anticipated to be insignificant and discountable.
- In order to minimize disturbance to eagles during the breeding season, maintenance of non-hazardous utility infrastructure will be coordinated with the Forests, AGFD, and FWS to identify active breeding areas for avoidance to reduce or eliminate the potential for adverse effects. Eagles could be briefly disturbed in the non-breeding season by ground crews startling or flushing a bird from a perch. These instances would occur in the non-breeding season, and are anticipated to be rare occurrences. As a result, we anticipate that the effect of non-hazardous utility infrastructure repair to bald eagles will be discountable.
- Hazardous line repair is not anticipated to be needed during the bald eagle breeding season. Throughout the action area, there are four breeding areas (Tower, Bartlett, Lynx, and Sheep) where transmission lines are closer than 0.25 mile from the nest area. While there is the potential for repair at these lines, there is only a very small chance that of the many miles of transmission line across the state, these four spots near these eagle nests would require treatment during the

nesting season. As a result, we anticipate that the effect of hazardous utility infrastructure repair to bald eagles, will be insignificant.

- Scheduled repair of access routes would be timed with other activities that avoid critical times for the breeding desert bald eagle. This will eliminate the potential for adverse effects to bald eagles. Due to the low likelihood and anticipated locations of treatments, the effects to eagles of route repairs during hazard treatments is expected to be insignificant.

### **California condor (outside non-essential experimental boundaries)**

Condors are a wide-ranging species, and appear to rely primarily on areas within the non-essential experimental boundary, specifically within the Grand Canyon complex along the Colorado River corridor and the Kaibab Plateau. Condors are occasionally found in Utah, Colorado, and Wyoming, and have also been detected within the action area for this project, foraging and roosting on the Kaibab and Coconino NFs outside the non-essential boundaries. These instances on the Kaibab and Coconino NFs are not common. When condors extend beyond the experimental population boundaries, they are fully protected as endangered.

- We do not anticipate that there will be any significant effect to condor habitat outside the non-essential experimental boundary. No nest areas for condors occur outside of the non-essential experimental boundary, and all known nest areas in Arizona have occurred on cliffs. As a result, no nesting areas are anticipated to be impacted by the proposed action. Condors are a wide-ranging species typically without narrow habitat requirements; as a result, the linear nature of power line vegetation management throughout the National Forests is not anticipated to alter the condors foraging environment. Because of the rarity of their visits to NFs within the action area (but outside of the non-essential experimental boundary), the condor's wide-ranging and broad habitat requirements, and the linear scope of vegetation utility maintenance (hazard vegetation removal, routine vegetation maintenance, vegetation disposal, inspections of vegetation and line facilities (ground-based inspections), maintenance and repair of line facilities, vehicle travel associated with all of these activities, and maintenance of access routes, we do not anticipate that any of these on-the-ground utility vegetation management activities will adversely impact habitat needs for the bird. Therefore, the effect of any utility vegetation management activities to condor habitat is anticipated to be insignificant and discountable.

Because Phase II actions occur across a broad area of these Forests, there is the possibility of a rare interaction between ground crews/vehicles and condors resulting in flushing a condor from a perch or a carcass. We believe these instances, while reasonable to anticipate over a 10-year period, would likely be a rare or isolated incident (because of the rarity that condors extend beyond the experimental boundary). As a result, any disturbance to condors associated with on-the-ground Phase II utility vegetation maintenance activities is anticipated to be insignificant and discountable.

- We also conclude that due to the infrequency of condors using NF lands outside of the non-essential experimental boundary, and the linear nature of utility vegetation management, we do not anticipate that helicopter reconnaissance/patrol flights will come in contact with condors to a degree that it will cause significant effects. Aerial patrol helicopter flights are anticipated to occur throughout these Forests annually. Because of the wide-ranging use of helicopters and the 10-year time of this project, it is not unreasonable to anticipate that a helicopter may briefly disrupt (i.e. startle, flush, etc.) a condor's behavior. However, due to the few instances that condors visit the Forest, we anticipate that these incidents will be rare and/or isolated. As a result, the effect of any disturbance to condors associated with aerial patrols is anticipated to be insignificant and discountable

#### **California condor (inside non-essential experimental boundary)**

- Because of the condor's status as an experimental, non-essential population, these condors are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

#### **Chiricahua leopard frog**

- No utility line corridor or access routes for these corridors exist in areas known to be occupied by Chiricahua leopard frogs. However, some utility corridors do occur within five miles of potential dispersal habitat for the frog. We do not expect travel along roads near these areas to result in significant effects to dispersing animals. The proposed action will likely result in relatively few visits to the area and the likelihood of the action impacting dispersing frogs is discountable.
- Indirect effects resulting from the removal of vegetation near occupied or potential frog habitat will be insignificant and discountable. Ground disturbing activities from mechanical treatments should not result in significant sediment movement or alter hydrologic conditions.
- The conservation measures developed are sufficient to reduce the effects of the proposed action. Additionally, the conservation measures will ensure that project planning and implementation accounts for newly discovered or reestablished populations of Chiricahua leopard frogs.

The Conservation Measures for the Chiricahua leopard frog are as follows:

1. Biologists or other environmental specialists from utility companies will contact appropriate biologists from FWS, AGFD, and FS on an annual basis to ensure that all project planning and implementation activities account for possible newly discovered or reestablished CLF populations. Biologists or other environmental specialists from utility companies will also 1) educate crews conducting utility corridor maintenance activities to

make sure they are aware of and understand the following conservation measures, and 2) ensure that conservation measures are implemented.

2. To the extent possible, surface-disturbing activities should be located outside of occupied CLF habitat, habitat restoration/creation sites, and the immediate watersheds of such habitats. Activities may include mechanical treatment (mowing), road improvements, erosion repair around utility structures, hole digging for pole replacement, and trench digging for repair or replacement of underground cable. If avoidance is not possible, surface-disturbing activities should be minimized in occupied CLF habitat, habitat restoration/creation sites, and the immediate watersheds of such habitats through the use of the least disturbing equipment (e.g., in sensitive riparian zones use hand tools in place of motorized equipment such as mowers).
3. Within occupied CLF habitats, the area of disturbance of vegetation, soils, and water should be the minimum required for the project activity. Project activities should be located out of wetted sites to the extent practicable. If practicable, locate equipment staging areas well away from occupied habitat and habitat restoration/creation sites. Standard best management practices should be taken to avoid or minimize runoff into and sedimentation of occupied CLF habitats.
4. Take measures as needed to minimize the risk of disease transmission associated with all utility line maintenance activities. If vehicles/equipment use will occur in more than one suitable, unoccupied or occupied frog habitat, ensure that all equipment is clean and dry or disinfected before it moves to another habitat.

### **Colorado pikeminnow**

- Because of the pikeminnow's status as an experimental, non-essential population, these fish found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

### **Gila chub and critical habitat**

- Utility corridors that occur within the watershed of occupied Gila chub habitat do not have a high potential for hazard vegetation (Appendix D, BA). These utility lines primarily occur in areas where the lines are far above habitat, thus precluding the need to remove vegetation. Soil disturbance resulting from any hazard vegetation removal is expected to be localized and outside the areas occupied by Gila chub. Therefore, effects resulting from vegetation removal that may occur in Gila chub habitat are expected to be insignificant.
- The likelihood of any direct or indirect interaction between the proposed action and primary constituent elements associated with designated Gila chub critical habitat are extremely low; therefore, any effects to critical habitat are assumed to be discountable.

- General Best Management Practices will be implemented to prevent erosion due to the proposed action and to address the spread of noxious weeds.

### **Gila topminnow**

- Only three of the ten populations of Gila topminnow within the action area are near utility lines. However, these utility lines do not bisect any of these waters and are 0.25 to 0.5 mile from Gila topminnow habitat. Due to the distance of these sites from these utility lines, the effect of hazard vegetation removal on the fish and its habitat is insignificant.

### **Lesser long nosed bat**

- The lesser long-nosed bat and roosting or maternity colonies are not known to occur on any of the National Forests covered under this consultation.
- Lesser long-nosed bat foraging habitat is known to occur within the action area; however, agave is not a target species for removal or pruning and on only rare occasions a saguaro and/or organ pipe cactus may be removed or pruned. Any effects to forage availability would be insignificant.
- Aerial surveys along the power line corridors will not occur during the time of day when bats are known to forage.

### **Little Colorado spinedace and its critical habitat**

- No direct effects to Little Colorado spinedace will occur from the proposed actions. There are no low-water crossings that will be utilized to access utility lines that occur near streams occupied by spinedace.
- Indirect effects resulting from the removal of vegetation near Little Colorado spinedace habitat will be insignificant. Ground disturbing activities from mechanical treatments should not result in significant sediment movement or alter hydrologic conditions.
- The likelihood of any direct or indirect interaction between the proposed action and primary constituent elements associated with designated Little Colorado spinedace critical habitat are extremely low; therefore, any effects to critical habitat are assumed to be discountable.

### **Mexican gray wolf**

- Because of the wolves' status as an experimental, non-essential population, wolves found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no

proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

### **Razorback sucker and its critical habitat**

- Utility lines bisect the Verde River where razorback sucker are known to occur and the Salt River where fish were stocked in the early 1990s (and its presence is likely extirpated or extremely rare). However, in many instances, these utility lines are strung high above the river channel and in most cases are well above the riparian corridor. It is expected that when hazard or non-hazardous vegetation removal occurs within the floodplain, that there will be no interaction between razorback suckers and the ground crews, equipment, vehicles, and treated vegetation. Because of the small area power lines exist in the floodplain and the few instances of tree removal, we do not anticipate this will result in any measurable river alteration or increase in sediment that could impact fish or their habitat. Therefore, we believe that the potential for hazardous and non-hazardous tree removal to result in direct or indirect effects to the fish or its habitat is insignificant and discountable.
- Roads that access the utility lines for patrols, inspections, vegetation treatments, access route repairs, and line repair do not enter the river in areas likely occupied by razorback sucker, and use of these roads to access utility lines will not result in direct effects to the fish and/or its habitat. Soils in floodplain areas are naturally unconsolidated and prone to movement during high flow events. Therefore, the potential effect from sediment input as a result of access to utility corridors for patrols, inspections, vegetation treatments and line repair is insignificant.
- The likelihood of any direct or indirect interaction between the proposed action and primary constituent elements associated with designated razorback sucker critical habitat are extremely low. The proposed action will not measurably affect the quality or quantity of water in the action area; no changes to physical habitat elements including areas for spawning, nursery, rearing, and feeding are anticipated; and no measurable impacts to the biological environment are anticipated due to the small amount of vegetation removed or sediment generated from the proposed action relative to the overall natural floodplain processes (flood scour-vegetation removal and sediment mobilization). Therefore, any effects to critical habitat are believed to be discountable.

### **Spikedace and critical habitat**

- Spikedace are present in Eagle Creek, but there are no utility lines present in the Eagle Creek watershed. Therefore, the proposed action will not result in any effects to Eagle Creek spikedace.
- Spikedace were detected in the Verde River in 1999. Because of the species' small size and low numbers, it is difficult to detect; however, we believe that spikedace, while rare, still persist in the uppermost reaches of the Verde River. Spikedace also occur in Fossil Creek where they were recently stocked

(November 2007) above Fossil Springs Dam. There are no low-water crossings that the project proponents use in the upper Verde River or in Fossil Creek. Therefore, there should be no direct effects to spikedeace resulting from accessing the utility lines. In addition, the soils in the area are naturally unconsolidated and prone to movement during high flow events. Therefore, sediment input as a result of access to utility corridors is insignificant.

- Indirect effects resulting from the removal of vegetation near spikedeace habitat will be insignificant. Ground disturbing activities from vegetation treatments will be buffered by undisturbed ground cover, and we do not expect the amount of vegetation removal in these areas to move sediment or alter hydrologic conditions in the Verde River or in Fossil Creek.
- The likelihood of any direct or indirect interaction between the proposed action and primary constituent elements associated with spikedeace critical habitat are extremely low; therefore, any effects to critical habitat are assumed to be discountable.

## APPENDIX B

This appendix contains our technical assistance for the candidate headwater chub. In the BA you determined that the proposed project was “not likely to jeopardize” the headwater chub. We agree with your determination for the following reasons.

- Direct effects from APS vehicles crossing two low-water crossings within the East Verde River are insignificant. Both crossings are lined with concrete and do not support suitable habitat for any life stage of headwater chub. Therefore, headwater chub will likely swim through the section of the river where APS vehicles cross; however, the timing of vehicle/chub encounters and the potential for adverse effects can not be meaningfully measured, detected, or evaluated.
- Indirect effects resulting from the removal of vegetation near headwater chub habitat will be insignificant. Ground disturbing activities from vegetation treatments are not expected to move a measurable amount of sediment or alter hydrologic conditions in occupied habitat due to existing undisturbed vegetation buffers between the treatment areas and occupied habitat, the incorporation of conservation measures, and best management practices intended to minimize soil erosion.



**APPENDIX C**

**Table 1. APS Proposed Action Summary**

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Aerial Hazard Patrol	All	March, April, May, June, July, Oct., Nov., or Dec.	minutes / 1-2 days each flight	2-3 times/year	Helicopter	N	Aerial Patrol excludes lines M-1, HC-2, PZ-1, PZ-4, SU-12, and STG-5	
Distribution Hazard Ground Patrol	Dist.	Year Round	Hours/ days	1 time/2 years to 8 times/year	4x4 (70%), ATV (25%), foot (5%)/ 1-2 persons	N	High risk lines patrolled 2 - 8 times per year	O4, H1, A1
Transmission Hazard Ground Patrol	Trans.	Year round	Hours/ days	1 - 2 times/year	4x4 (70%), ATV (25%), foot (5%)/ 1-2 persons	N	Only high risk lines patrolled 2 times per year	H1, A1
Routine Maintenance Planning Patrol	All	Year round	Hours/ days	1 time every 2 to 5 years depending on maintenance cycle of the line	4x4 (70%), ATV (25%), foot (5%)/ 1-2 persons	N		H1, A1
Transmission Routine Maintenance Treatments	69, 115, 230, 345, 500kV	Year round	days-wks / 2 -9 months	Every 5 years	Hand crews and/or mower, chain saws, rope, 4 x 4, ATV, chipper foot/ 25-100 people hand crews, 2 people mower	Y (infreq)	Lines requiring extensive clearing may require 6 to 9 months to complete work	O1, O2, O5, F1, Y1, H1, A1, R(all)
Distribution Routine Maintenance Treatments	Dist.	Year round	days-wks / 2 -9 months	Every 2 to 5 years	Hand crews, chain saws, rope, 4 x 4, bucket truck, ATV, foot, chipper/ 4-25 people	Y (infreq)	Lines requiring extensive clearing may require 6 to 9 months to complete work	O1, O2, O5, F1, Y1, H1, A1, R(all)
Hazard Vegetation Treatments	all	As needed	hours	Once every 5 yrs to 8 times a year	Hand crews. 4x4, ATV, bucket truck, chipper, foot/ 2-5 people	Y (very infreq)	High risk lines treated 2 - 8 times a year as single trees or small clumps	O4, O5, O6, H1, A1, R(all)

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Line Maintenance</b>								
Distribution Public Safety Ground Patrol	Dist.	January - June	hours / 2-6 months across multiple lines	Annual	4x4, ATV, foot, or bucket truck/ 1-2 persons	N	May conduct minor repairs during patrol	H1, A1
Transmission Public Safety Aerial Patrol	69, 115, 230, 345, 500	Feb. - March	minutes / 2-3 weeks	Annual	Helicopter	N	May hover or circle or land to get a closer look. Additional flights may occur in the fall on the 230-2 line.	
Wood Pole Inspection/Treatment	All	Year Round	Hours/ yr. round	Transmission: every 10 years/ Distribution: 10% every 10 years	4 x 4, foot. Hand tools (electric drill, hammer, shovel)/ 1-2 people	N		H1, A1
Transmission Climbing Inspection	Wood: 69, 115, 230 Steel: 345, 500	Year Round	days - wks./ yr. round	Every 10 years wood poles, every 7 years steel structures	Bucket, boom, hole digger (wood only), and/or 4x4 trucks w/ trailer attachments/ 1-2 people	Y (infreq)		O1, O2, H1, A1, F, Y1, R(all)
Transmission Repair	69, 115, 230, 345, 500	Year-round	day – wks / yr round	Once every year for minor repairs/ every 7-10 years on portions of each line for major repairs	as needed: Bucket, boom (bucket or boom 90%), hole digger, cable puller, and 4x4 trucks, caterpillar, trailer attachments (could also use helicopter)/ 3-15 people	Y (infreq)	Most repairs are conducted during the Transmission climbing inspection, but additional repairs are conducted to repair problems identified in the transmission public safety patrol	Hazards: O4, O6, H1, A1, R(all) Non-Hazards: O1, O2, F1, Y1, H1, A1, R(all)
Distribution Repair	Dist.	year round	day(s)	Once every year for minor repairs/ every 2 years on small section of most lines for major repairs	as needed: 4 x 4, bucket, pole diggers, cable pullers trucks, trailer attachments, and helicopters; 3-15 people	Y (very infreq)		Hazards: O4, O6, H1, A1, R(all) Non-Hazards: O1, O2, F1, Y1, H1, A1, R(all)

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
Underground Patrols	UG dist.	year round	hours	Underground cable= no patrol; switching cabinets= every 2 yrs.; transformers= unknown	4x4 truck/ 1 person	N	the underground cable is not patrolled	H1, A1
Underground Repairs	UG dist.	year round	hours-days	underground cable= repair -5 yrs., replace -30 yrs.; switching cabinets and transformers= minor - every 2-5 yrs., major -rare	Underground cable= backhoe, 4x4; transformers and switching cabinets= boom truck, 4x4, bucket truck/ 1-10 people	Y (very infreq)	Vegetation may need to be removed for access into cable for underground cable repairs. This would occur every 5 to 30 years.	Hazards: A1, H1, O4, O6, R(all) Non-Hazards: O1, O2, H1, A1, R(all)

<sup>1</sup> Very infrequent: < 1 occurrence per year; infrequent: < 6 occurrences per year; common: > 6 occurrences per year; also note that occurrence frequency is for all lines, thus the rate of occurrence at specific location (i.e., within occupied habitat) would be much lower.

<sup>2</sup> Letters and numbers correspond to Species Conservation Measures list below; R<sub>all</sub> refers to Route BMPs listed below

**Table 2. SRP Proposed Action Summary**

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Patrol – Transmission Routine Maintenance	115, 230, 500	November to January	1 <sup>st</sup> 3 flights minutes / 1 day each 2 <sup>nd</sup> 1 week – 3 mos	annual	1 <sup>st</sup> Helicopter 2 <sup>nd</sup> Ground patrol (1 – 3 people, 4x4, ATV, foot)	N		O3, H1
Transmission Routine Maintenance Treatments	115	Year round	days-wks / 3 -5 mos	annual	1 <sup>st</sup> Hand crews (2 – 25 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope 2 <sup>nd</sup> Mower (2 – 5 people), 4x4, chainsaw, rope)	Y (infreq)		H1, R <sub>all</sub>
	230	Year round	days-wks / 3 -5 mos	annual	1 <sup>st</sup> Hand crews (2 – 25 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope 2 <sup>nd</sup> Mower (2 – 5 people), 4x4, chainsaw, rope)	Y (infreq)		H1, R <sub>all</sub>
	500	Year round	days-wks / 3 -6 mos	annual (Browning – Silverking 1:5 yrs (Coronado-Silverking)	1 <sup>st</sup> Hand crews (2 – 100 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope 2 <sup>nd</sup> Mower (2 – 5 people), 4x4, chainsaw, rope)	Y (infreq)	On Coronado-Silverking mowers are primary method on the ASNF	O1, O2, O5, F1, Y1, H1, R <sub>all</sub>
Transmission Hazard Patrol	All	As needed	Air – minutes Ground – Hours	very infrequent	1 <sup>st</sup> Helicopter 2 <sup>nd</sup> Ground patrol (2 – 3 people, 4x4, ATV, foot)	N	Also check for hazards during routine maintenance aerial patrol	O4, H1, R <sub>all</sub>

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
Transmission Hazard Treatments	All	As needed	Hours / 1 week	very infrequent	Hand crews (2 – 6 persons). 4x4, ATV, foot; chainsaw, hand saw, pole pruner, rope, climbing saddle	Y (very infreq)		O4, O5, O6, H1, R <sub>all</sub>
Transmission Work Audits	All	During & post treatments	hours	During & post treatments	1 <sup>st</sup> Helicopter 2 <sup>nd</sup> Ground patrol (1-2 people, 4x4, ATV, foot)	N		O1 O2, O3, F1, H1
Distribution Routine Maintenance Planning	12, 22, 33	Year round	hours / 1 -2 mos	1:18 – 24 mos	99.9% Ground Patrol (1-2 people, 4x4, ATV, foot), < 1% helicopter (rarely)	N		H1
Distribution Routine Maintenance	12	Year round	hours / 1 -2 mos	1:2 yrs	Hand Crews(2 – 60 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope	Y (very infreq)		R <sub>all</sub>
	22	Year round	hours / 1 -2 mos	1:2 yrs	Hand Crews (2 – 60 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope	Y (infreq)		F1, Y1, H1, R <sub>all</sub>
	33	Year round	hours / 1 -2 mos	1:2 yrs	1 <sup>st</sup> Hand crews (2 – 60 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope 2 <sup>nd</sup> Mower (infrequent)	Y (infreq)		O1, O2, O5, R <sub>all</sub>
Distribution Hazard Patrol	12 – 33	As needed	Hrs	very infrequent	99.9% 1 – 2 people 4 x 4, ATV < 1% Helicopter (rarely)	Y (very infreq)		O4, H1, R <sub>all</sub>
Distribution Hazard Treatment	12, 22, 33	As needed	hrs / 1 week	very infrequent	Hand crews (2 – 25 people), 4x4, ATV, foot, bucket truck, manual truck, chainsaw, hand saw, pole pruner, climbing saddle, rope	Y (very infreq)		O4, O6, H1, R <sub>all</sub>

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
Ground Patrol – Distribution Work Audits	12, 22, 33	During & post treatment	Hrs	During & post treatment	1 – 2 people, 4x4, ATV, foot	N		O1, O2, O3, O4, F1, Y1, H1
<b>Line Maintenance</b>								
Transmission Inspection	Ground: 115, 230, 500	Sept – May	hours / 5 -7 days	2:1 yrs	90% 4x4; 1 - 2, 10% ATV, (larger truck if fault)	Y (very infreq)		H1, R <sub>all</sub>
	Air 115 - 500	Spring: mid-Mar – mid-May Fall: Oct-Dec 1	minutes / days	2:1 yrs	Helicopter	N	Open door on helicopter to conduct inspection - heat and cold worker safety issue; also inspection in spring must be after snow/frost	
Transmission Repair	all	Year-round	day – wks / yr round	1:6 -10 yrs for minor; 1:10 – 20+ yrs major	Varied depending on activity (could include helicopter). 2 - 11+ person crews	Y (infreq)		O1, O2, O3, F1, H1, Y1, R <sub>all</sub>
Transmission Hazard Inspection	115-500	as needed	minutes - hours	infrequent -common	1 <sup>st</sup> Helicopter, 2 <sup>nd</sup> 4x4, ATV	N		H1
Transmission Hazard Repair	all	as needed	days	very infrequent - infrequent	Varied depending on activity (could include helicopter). 2 - 11+ person crews	Y (very infreq)	rarely issue needs immediate repair	O4, O6, H1, R <sub>all</sub>
Wood Pole Inspection/treatment	12 - 230	year round	hours – days	1:12 yrs. All done same year	Handtools (electric drill, tap hammer), 4x4, ATV	Y (very infreq)	Very little noise or disturbance; if decay/insects found poles are scheduled for treatment (immediate or within 1 year)	O4, H1, R <sub>all</sub>
Distribution Inspection	12 – 22	year round	hours – days	1:10 -12 yrs	4 x 4; 1-2 person crews	Y (very infreq)		H1, R <sub>all</sub>
Distribution Repair	12 - 33	year round	day(s)	1:6 – 10 yrs	as needed: 4 x 4, bucket trucks, pole diggers, cable pullers, and helicopters; 4 person	Y (very infreq)		O1, O2, F1, Y1, H1, R <sub>all</sub>

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
Distribution Hazard Inspection	12 - 33	as needed	hours	infrequent	4 x 4; 1-2 person crews	Y (very infreq)		H1, R <sub>all</sub>
Distribution Hazard Repair	12 - 33	as needed	day(s)	infrequent	as needed: 4 x 4, bucket trucks, pole diggers, cable pullers, and helicopters; 4 person	Y (very infreq)		O4, O6, H1, R <sub>all</sub>
Underground Patrols	12 - 33	Year round	Hours - days	Every 10 – 12 yrs.	4x4 truck; 1-2 person crews	Y (very infreq)		
Underground Repairs	12 – 33	As needed	Hours - days	infrequent	4x4 truck, backhoe, trailer attachments; 4 person	Y (very infreq)	For cable replacement, work may involve removal of vegetation by hand crews.	

<sup>1</sup> Very infrequent: < 1 occurrence per year; infrequent: < 6 occurrences per year; common: > 6 occurrences per year; also note that occurrence frequency is for all lines, thus the rate of occurrence at specific location (i.e., within occupied habitat) would be much lower.

<sup>2</sup> Letters and numbers correspond to Species Conservation Measures list in the proposed action; R<sub>all</sub> refers to Route BMPs listed in the proposed action.

**Table 3. WAPA Proposed Action Summary**

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Routine Aerial Patrol	All	Any time of year	minutes / days	4 flights/year	Helicopter	N	Same patrol for Line Maintenance. Helicopter may land near line to get a closer look ~1-2 times per flight	
Routine Ground Patrol	All	April to September	Hours/ weeks	Every 3 years	4x4 truck/ 2 people	N	Same patrol for Line Maintenance	
Unscheduled Hazard Patrol	All	Year round	Hours/ days	as needed	4x4 truck/ 2 people	N	Same patrol for Line Maintenance. Some of the unscheduled patrols follow up with hazards identified in aerial patrols.	
Routine Maintenance Planning Patrol	All	Year round	Hours/ days-weeks	Prior to routine maintenance treatment - once every 5 yrs.	4x4 truck/ 2 people	N		
Routine Maintenance Treatments	All	Year round	Hours/ Months	Every 5 years	Hand crews and/or mower, chain saws, rope, 4 x 4, ATV, chipper, bucket truck, foot/ 6-24 people hand crews, 2 people mower	Y (infreq)		O1, O2, O5, R(all)
Hazard Vegetation Treatments	All	As needed	Hours/ days-weeks	annually	Hand crews. 4x4, bucket truck, chipper, foot/ 6-8 people	Y (very infreq)		O4, O5, O6, R(all)



Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Line Maintenance</b>								
Routine Aerial Patrol	All	Any time of year	minutes / days	4 flights/year	Helicopter	N	Same patrol for Line Maintenance. Helicopter may land near line to get a closer look ~1-2 times per flight	
Routine Ground Patrol	All	April to September	Hours/ weeks	Every 3 years	4x4 truck/ 2 people	N	Same patrol for Line Maintenance	
Unscheduled Hazard Patrol	All	Year round	Hours/ days	as needed	4x4 truck/ 2 people	N	Same patrol for Line Maintenance. Some of the unscheduled patrols follow up with hazards identified in aerial patrols.	
Line Maintenance Repair	All	Year-round	day – wks / yr round	Minor repairs= on each line each year; Major repairs= very rare	4x4 (40%), bucket truck (20%), semi-truck (5%), truck with trailer attachment (35%) (helicopter may transport crews and equipment at West Clear Creek on Flagstaff to Pinnacle Peak line 1 time a year)/ 2-10 people	Y (infreq)		Hazards: O4, O6, R(all) Non-Hazards: O1, O2, R(all)

<sup>1</sup> Very infrequent: < 1 occurrence per year; infrequent: < 6 occurrences per year; common: > 6 occurrences per year; also note that occurrence frequency is for all lines, thus the rate of occurrence at specific location (i.e., within occupied habitat) would be much lower.

<sup>2</sup> Letters and numbers correspond to Species Conservation Measures list in the proposed action; R<sub>all</sub> refers to Route BMPs listed in the proposed action.

**Table 4. NEC Proposed Action Summary**

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Routine Ground Patrol	All	April, May, or June and August to November	Hours/weeks	1-2 times per year	4x4 (85%), ATV (10%), walking (5%)/ 2 people	N	Same patrol for Line Maintenance	L1, L5
Unscheduled Hazard Patrol	All	Year round	Hours/days	as needed	4x4 (85%), ATV (10%), walking (5%)/ 2 people	N	Same patrol for Line Maintenance	L1, L5
Routine Maintenance Planning Patrol	All	Year round	Hours/days-weeks	Prior to routine maintenance treatment – every 5 years	4x4 (85%), ATV (10%), walking (5%)/ 2 people	N		L1, L5
Routine Maintenance Treatments	All	Year round	Hours-days/months	Every 5 years	Hand crews, chain saws, rope, chipper, 4 x 4 (85%), ATV (5%), bucket truck (5%), foot (5%)/ 2-3 people	Y (infreq)		L2, L3, L4, O1, O2, O5, F1, Y1, R(all)
Hazard Vegetation Treatments	All	As needed	hours	1-2 times per year	Hand crews, chain saws, rope, chipper, 4 x 4 (85%), ATV (5%), bucket truck (5%), foot (5%)/ 2-3 people	Y (very infreq)		L2, L3, L4, O4, O5, O6, R(all)
<b>Line Maintenance</b>								
Routine Ground Patrol	All	April, May, or June and August to November	Hours/weeks	1-2 times per year	4x4 (85%), ATV (10%), walking (5%)/ 2 people	N	Same patrol for Vegetation Management	L1, L5
Unscheduled Hazard Patrol	All	Year round	Hours/days	as needed	4x4 (85%), ATV (10%), walking (5%)/ 2 people	N	Same patrol for Vegetation Management	L1, L5
Wood Pole Inspection/Treatment	All	Year Round	Hours/ yr. round	every 10 years	4 x 4, foot. Hand tools (electric drill, hammer, shovel)/ 1-2 people	N		

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Line Maintenance Repair	All	Year-round	day – wks / yr round	Minor repairs= portions of most lines every year; Major repairs= portions of each line every 10 yrs.	As needed: Bucket, boom, hole digger, and 4x4 trucks, trailer attachments / 4 people	Y (infreq)		Hazards: O4, O6, L2, L3, L4, R(all)  Non-Hazards: O1, O2, F1, Y1, L2, L3, L3, R(all)
Underground Repairs	UG dist.	year round	hours - days	underground cable= repair -5 yrs., replace -30 yrs.; switching cabinets and transformers= repairs as needed	Underground cable= backhoe, 4x4; transformers and switching cabinets= 4x4, bucket truck/ 3-4 people	Y (very infreq)	Vegetation may need to be removed for access into cable for underground cable repairs.	Hazards: O4, O6 Non-Hazards: O1, O2, R(all)

<sup>1</sup> Very infrequent: < 1 occurrence per year; infrequent: < 6 occurrences per year; common: > 6 occurrences per year; also note that occurrence frequency is for all lines, thus the rate of occurrence at specific location (i.e., within occupied habitat) would be much lower.

<sup>2</sup> Letters and numbers correspond to Species Conservation Measures list in the proposed action; R<sub>all</sub> refers to Route BMPs listed in the proposed action.

**Table 5. Garkane Proposed Action Summary**

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Vegetation Management</b>								
Aerial Hazard Patrol	All	April, May, or June and September or October	minutes / 1 day	2 flights/year	Helicopter	N	Same patrol for Line Maintenance	
Routine Ground Patrol	All	April, May, or early June and/or October or November	Hours/ weeks	1-2 times per year (fall patrol follows up with fall aerial patrol)	4x4 (80%), ATV (10%), snowmobile or snowcat (10%)/ 2-4 people	N	Same patrol for Line Maintenance	
Unscheduled Hazard Patrol	All	Year round, but usually summer	Hours/ days	as needed	4x4 (80%), ATV (10%), snowmobile or snowcat (10%)/ 2-4 people	N	Same patrol for Line Maintenance	
Routine Maintenance Planning Patrol	All	Year round	Hours/ days-weeks	Prior to routine maintenance treatment - once every 3 - 10 yrs depending on maintenance cycle	4x4 (80%), ATV (10%), snowmobile or snowcat (10%)/ 2-4 people	N		
Routine Maintenance Treatments	All	Year round	days-wks / 2 - 5 months	Every 3 - 10 years	Hand crews and/or mower, chain saws, rope, 4 x 4, ATV, chipper, bucket truck, foot, snowcat/ 2-4 people hand crews, 2 people mower	Y (infreq)	Because of snow conditions, work may not be conducted in consecutive months	R(all)
Hazard Vegetation Treatments	All	As needed	hours	1-2 times per year	Hand crews. 4x4, bucket truck, chipper, snowmobile, foot/ 2-4 people	Y (very infreq)		R(all)

Activity	Line size (kv)	Timing (time of year)	Duration local/total	Frequency (how often) <sup>1</sup>	Equipment/Crew	Road Maint. <sup>1</sup>	Comments	Conservation Measure <sup>2</sup>
<b>Line Maintenance</b>								
Aerial Hazard Patrol	All	April, May, or June and September or October	minutes / 1 day	2 flights/year	Helicopter	N	Same patrol for Vegetation Management	
Routine Ground Patrol	All	April, May, or early June and/or October or November	Hours/ weeks	1-2 times per year (fall patrol follows up with fall aerial patrol)	4x4 (80%), ATV (10%), snowmobile or snowcat (10%)/ 2-4 people	N	Same patrol for Vegetation Management	
Unscheduled Hazard Patrol	All	Year round, but usually summer	Hours/ days	as needed	4x4 (80%), ATV (10%), snowmobile or snowcat (10%)/ 2-4 people	N	Same patrol for Vegetation Management	
Wood Pole Inspection/ Treatment	All	Year Round	Hours/ yr. round	Transmission: every 10 - 15 years; Distribution: as needed (>15 yrs.)	4 x 4, foot. Hand tools (electric drill, hammer, shovel)/ 1-2 people	N		
Line Maintenance Repair	All	Year-round	day – wks / yr round	Minor repairs= on 5-10% of each line each year; Major repairs= about 20-35 structures treated each year	As needed: Bucket, hole digger, and 4x4 trucks, caterpillar, trailer attachments / 4 people	Y (infreq)		R(all)
Underground Repairs	UG dist.	year round	hours-days	underground cable= repair -5 yrs., replace -30 yrs.; switching cabinets and transformers= minor -every 2-5 yrs., major -rare	Underground cable= backhoe, 4x4; transformers and switching cabinets= boom truck, 4x4, bucket truck/ 1-10 people	Y (very infreq)	Vegetation may need to be removed for access into cable for underground cable repairs. This would occur every 5 to 30 years. Garkane does not conduct patrols on underground lines.	

<sup>1</sup> Very infrequent: < 1 occurrence per year; infrequent: < 6 occurrences per year; common: > 6 occurrences per year; also note that occurrence frequency is for all lines, thus the rate of occurrence at specific location (i.e., within occupied habitat) would be much lower.

<sup>2</sup> Letters and numbers correspond to Species Conservation Measures list in the proposed action; R<sub>all</sub> refers to Route BMPs listed in the proposed action.

## APPENDIX D

### **Monitoring and Reporting Procedures for Proposed Utility Actions**

The utilities shall provide annually (Jan 30 of each year the biological opinion is in effect) to the FS and FWS a summary of the activities conducted under this proposed action and Biological Assessment. The information will be used to assess if the actions as implemented were accurately described and analyzed in the BA and BO, and that the effects of the action are not greater than anticipated.

#### **Reporting of Hazard Vegetation Treatments:**

The utilities shall provide a summary of hazard vegetation work activities as described in the proposed action for those species and/or critical habitat with “Likely to Adversely Affect” determinations. These species include the Mexican spotted owl (PACs and critical habitat), yellow-billed cuckoo (suitable and occupied habitat), Southwestern willow flycatcher (occupied, suitable, and critical habitat), and loach minnow (occupied and critical habitat - Campbell Blue and Blue Rivers): The summary shall include:

1. The GPS or geographic location of the tree(s) or vegetation
2. The power line name and/or number
3. The species and status of the tree (s) or vegetation (live or dead)
4. The size class of the tree (primarily applicable to MSO PACs and critical habitat)
5. The date the trees were located
6. The number, size class, and species of trees that were damaged or removed due to felling the hazard tree or vegetation if applicable
7. The date(s) of when the action occurred
8. The wildlife or fish species and or their critical habitat in the vicinity of the action (i.e., MSO, cuckoo, flycatcher, loach minnow)

#### **Reporting of Routine Vegetation Maintenance:**

The utilities shall provide a summary of routine vegetation maintenance activities as described in the proposed action. The summary shall include:

1. The power line name and/or number
2. A brief description of the activities conducted
3. A start and end point of the area treated
4. The dates of when the work was conducted

#### **Reporting of Hazardous Line Maintenance:**

The utilities shall submit a report describing hazardous line maintenance work as described in the proposed action for those species and/or critical habitat with Likely to Adversely Affect determinations. These species include the Mexican spotted owl (PACs and critical habitat), yellow-billed cuckoo (suitable and occupied habitat), southwestern willow flycatcher (occupied, suitable, and critical habitat), and loach minnow (occupied and critical habitat - Campbell Blue and Blue Rivers). The summary shall include:

1. The GPS or geographic location of the treatment area
2. The power line name and/or number
3. A brief description of the work conducted
4. The date(s) the work was conducted
5. The wildlife or fish species and or their critical habitat in the vicinity of the action (i.e., MSO, cuckoo, flycatcher, loach minnow)

### **Reporting of Aerial Flights**

The utilities shall provide a summary of unscheduled aerial flights. The unscheduled aerial flights are flights that are those that occur above and beyond the routinely scheduled aerial patrols for vegetation management and line maintenance. Unscheduled flights typically only involve a single line and occur for various reasons. Here are a few examples: an unscheduled flight may occur to inspect a potential hazard; to drop crews and/or equipment into a remote area for work; and to aid in repair or maintenance work on power line structures. The summary of unscheduled aerial flights shall include:

1. The power line name and number
2. A brief description of the purpose of the unscheduled flight
3. Starting and ending locations of the flight
4. Landing locations, if applicable
5. Duration of flight if over multiple days
6. The dates of the flight(s)

### **Field Inspection of Treatment Activities**

The Forest Service and Fish and Wildlife Service will annually schedule with the utilities a patrol of selected sections of lines that were worked on during the previous year. Preferably, one terrestrial and one fisheries biologist from the FS and FWS that were on the Biological Assessment consultation team would attend the patrol. The purpose of the patrol will be to visually assess that the work conducted was in accordance with the description of the proposed action, and that the analysis of effects to the species was assessed appropriately in the BA.

### **Species Updates and Incorporation of New Information**

The utilities will work with the FS, FWS, and Arizona Game and Fish Department (Heritage Data Management System), to annually update species information to ensure that new information is incorporated and assessed relative to the proposed action.