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AESO/SE  
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February 11, 2004

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

RE: Rodeo-Chediski Salvage Logging (Your File 2670/1900)

Dear Ms. Zieroth:

This biological opinion responds to your request for consultation 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 for formal consultation was dated August 15, 2003 and received by us on August 18, 2003. This consultation concerns impacts that may result to Mexican spotted owls (*Strix occidentalis lucida*) from the proposed salvage logging of areas burned during the Rodeo-Chediski wildfire on portions of the Tonto and Apache-Sitgreaves National Forests in Gila, Navajo, and Coconino counties, Arizona. The Forest Service has determined that the proposed action will not result in the destruction or adverse modification of proposed critical habitat for the Mexican spotted owl. Therefore, proposed critical habitat for this species will not be addressed in this opinion.

In your letter, you requested our concurrence that the proposed action is not likely to adversely affect the Colorado pikeminnow (*Ptychocheilus lucius*), Chiricahua leopard frog (*Rana chiricahuensis*), or bald eagle (*Haliaeetus leucocephalus*). We concur with these determinations. A discussion of our rationales is provided in Appendix A.

This biological opinion is based on information provided in the August 15, 2003, biological assessment and evaluation (BAE) and its attached appendices and maps, telephone conversations, field investigations, Interdisciplinary Team meetings, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on MSOs or the effects of the proposed salvage logging effort, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

## Consultation History

- The Rodeo-Chediski fire began on June 18, 2002.
- We were contacted by your staff on June 26, 2002 regarding emergency consultation for the Rodeo-Chediski Fire.
- We replied in writing on June 26, 2002 confirming initiation of emergency consultation procedures.
- We received a copy of the draft BAE during May 2003 and provided written comments on May 12, 2003.
- We provided a letter dated June 30, 2003 requesting additional information on the BAE, and recommending that the Forest Service consider formal consultation for the MSO.
- We provided a letter dated August 6, 2003, at the request of Mr. Terry Myers of your staff, explaining our reasons for excluding Little Colorado spinedace (*Lepidomeda vittata*) and razorback sucker (*Xyrauchen texanus*) from the species list for the proposed action.
- We received an August 15, 2003 letter in response to our June 30, 2003 letter providing clarification of the draft BAE and requesting that we initiate formal consultation for the MSO.
- We provided a 30-day letter on September 19, 2003 notifying you that formal consultation had been initiated. The letter indicated that this biological opinion would be due no later than December 31, 2003.
- On October 24, 2003, we received a CD with the Draft Environmental Impact Statement for the proposed action. Information on this CD was used in the development of this opinion.
- On January 29, 2004, we provided a draft biological opinion for your review.
- On February 7, 2004, your staff provided comments on the draft biological opinion. Those comments were reviewed and, where appropriate, incorporated into this final opinion.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

The proposed action involves the salvage harvest of dead standing trees with merchantable value on approximately 34,156 acres of Forest Lands that experienced moderate to high burn severity during the Rodeo-Chediski wildfire. Dead trees have been defined as those with no needles remaining. The salvage logging operation would involve road construction, landing area construction, tree felling, and log hauling. Details for each component of the proposed action are contained in the BAE (Forest Service 2003) and are summarized below. Harvest activities are

expected to occur for a three-year period, while fuelwood, specialty wood products, and other small-sale projects would occur over a 10-year timeframe. Roads built or opened would be closed when no longer required for harvesting activities, and would be open no longer than the 10-year timeframe. Figure 1 in Appendix B shows the proposed action area. The proposed action area covers salvage logging on approximately 34,156 acres and fuelwood harvest on an additional 6,903 acres on the Black Mesa and Lakeside Ranger Districts of the Apache-Sitgreaves National Forest, and the Payson Ranger District of the Tonto National Forest.

### Road Construction, Maintenance, and Use

The Forest Service or its contractors will complete road maintenance activities on 323 miles of roads within the Rodeo-Chediski Draft Environmental Impact Statement (DEIS) analysis area at some time during the life of the salvage operation. Appendix C of the BAE provides a description of the mileage associated with various roads in the proposed action area, and is incorporated herein by reference. Road maintenance activities include:

- Replacing or removing culverts, restoring natural drainage patterns, and installing drainage dips and other surface water diversions. Culvert replacement would be designed to stabilize stream banks and river bottoms and improve road conditions. New culverts would be designed to match natural stream gradients and provide natural stream bottom characteristics;
- Constructing road turnouts;
- Applying gravel to road surfaces and/or borrow to segments that are maintained on poor soils or near streams;
- Installing sediment filters between streams and road fills;
- Surfacing road segments and hardening crossings;
- Installing road-guide signs;
- Dust abatement with magnesium chloride, lignin, or water on approximately 49 miles of roads;
- Opening 100 miles of roads that are currently closed to facilitate salvage logging, and closing and re-seeding these roads after harvest activities have been completed;
- Constructing 20 miles of new temporary roads to access treatment areas. New roads would be limited to areas with slopes of less than 40 percent. Roads would be rehabilitated and closed following the proposed action.
- Removing approximately 68.3 million board feet (MMBF) of timber, which roughly represents 13,660 log trucks on roads throughout the proposed action area.

### **Conservation/Mitigation Measures Associated with Road Construction and Maintenance**

Coded letters at the beginning of some items identify the mitigation measure as listed in Appendix A of the BAE. Best management practices associated with roads are contained in Appendix G of the BAE. Only those mitigation measures expected to minimize impacts on listed species are reiterated here.

- WILD-M-4: Establish a 100-foot, no-action buffer around potential habitat. Complete surveys for the Chiricahua leopard frog prior to any activities in or within 100 feet of potential habitat. Potential habitat consists of any ponds, lakes, or streams in the analysis area. Neither magnesium chloride nor lignin will be permitted on 400-foot sections of roads identified in Appendix F of the BAE.
- ROADS-M-3: Construct turnouts or double-lane sections in accordance with FSH 7709.56. No additional turnouts will be constructed from Gentry lookout west on FR 300 for one mile.
- ROADS-M-9: Obliterate temporary roads by scarifying road beds, reshaping the road prism to match the original contour, placing slash and woody debris on the disturbed area, and seeding the disturbed area.
- ROADS-M-12: Install hardened drainage crossings at natural grade. Additional rolling dips or waterbars are preferred to culverts to divert water off of roads and out of roadside ditches.
- Runoff from road prisms must be discharged frequently enough to avoid erosion or overtopping of roadside ditches. Drainage from the road prism and associated ditches must be discharged into buffer strips, or scattered slash piles, to dissipate its energy and allow for sediment deposition prior to reaching the natural drainage system. Where this is not possible, that portion of the road will be located away from the channel or will be marked to include in the long-term rehabilitation of the burned area.
- Rolling dips (low areas on the road where water can cross without culverts), stream crossings, and culverts will be improved and corrected. Water-bars on the uphill side of the road will be extended or enlarged as needed to insure that all flow from ditches or drainages is diverted across the road.
- Reinstallation of culverts removed as part of the Burned Area Emergency Rehabilitation (BAER) effort will be carefully evaluated to determine need. Hardened drainage crossings will be recommended instead, installed at natural grade. Rolling dips or water bars will be used rather than culverts. Any culverts that are installed will need to be sized for current watershed conditions so that they will adequately accommodate debris and increased runoff from the burned area until pre-fire watershed conditions are restored.

- All ATV barriers on trails and on areas closed to traffic will be replaced following the proposed action.

### Logging Deck Construction and Use

The proposed action involves the construction and use of an unknown number of logging decks. The number of needed logging decks depends on harvest volume, the number of the trees cut, and how quickly trees can be cut and removed. Each deck will be approximately 0.25 acres in size. All decks will be built within the perimeter of the sales area, meaning they will be constructed within areas that were moderately to severely burned. They would be concentrated within the cutting units, where dead trees would be removed for salvage, or where openings naturally occur. Decks are typically placed along temporary roads or re-opened roads. Construction of decks along main travel routes is avoided wherever possible.

### **Conservation/Mitigation Measures Associated with Logging Decks**

Coded letters at the beginning of each item identify the mitigation measure as listed in Appendix A of the BAE.

- SOILS-M-7: Select landing locations and sizes that minimize vegetation and soil loss. After harvest, close landings by scarifying them, placing slash and woody debris on disturbed areas, and seeding them.
- SOILS-M-24: Ensure that logs are not decked within ephemeral streams or swales.

### Salvage Logging

The proposed action would salvage dead standing trees with merchantable value on approximately 34,156 acres of burned areas classified as either moderate or high burn severity. Dead standing trees that are 12-inches in diameter at breast height (dbh) or larger would be removed. Ground-based logging systems will be used. These systems include the use of tractors, skidders, and other mechanical equipment. While only dead trees will be felled, they may be removed through areas with live vegetation; therefore, skid trails may result in areas which currently support live vegetation.

Maps in Appendix D of the BAE identify the location of salvage treatments, and are incorporated herein by reference. However, the BAE notes that specific harvest-unit boundaries may be adjusted during the sale layout following field review of burn-severity conditions on the ground.

### **Conservation/Mitigation Measures Associated with Salvage Logging**

Coded letters at the beginning of some items identify the mitigation measure as listed in Appendix A of the BAE (numbers may vary with those in the DEIS).

- Salvage harvest is excluded in the Canyon Creek and Mule Creek drainages to prevent potential impacts to MSO and its habitat, and to reduce sediment flow into streams that flow into Canyon Creek. This will also be potentially beneficial to Chiricahua leopard frogs or their habitat.
- The number of snags to be retained in some treatment areas was increased from the original plan, and the snags retained will be from the largest two-inch size class above 18 inches dbh, and will be clumped in groups of three to five trees wherever possible. Additional snags will be retained within a 0.25 of a mile buffer around PACs and, within these buffer areas, five of the largest diameter snags and three downed logs will be retained per acre. These areas are identified on maps in Appendix D and are incorporated herein by reference.
- Logging slash and other vegetative material will be scattered on the ground following salvage harvest activities to increase the amount of ground cover in areas that were severely burned by the fire. This may decrease runoff in these areas and aid in soil retention.
- No treatments are proposed within 0.25 of a mile of known concentration areas for wintering bald eagles.
- The largest snags, which potentially serve as winter roosts for bald eagles, are to be retained per requirements of the Apache-Sitgreaves and Tonto National Forest Plans.
- No salvage operations are planned within existing PACs.
- The south end of the 87 Road, which passes through PAC 207, will not be used as a haul route during the breeding season.
- Logging trucks passing within PACs or 0.25 of a mile of PAC boundaries will adhere to a 25 mile per hour speed limit.
- Mechanized equipment will not be used within any Chiricahua leopard frog habitat or disturb any perennial waters within the analysis area.
- SOILS-M-1: Limit ground disturbing activities (tractor skidding, decking, machine piling, etc.) to dry or frozen conditions, especially on soil map units 183, 191, 192, 193, 197, 198, and 202. This would reduce compaction and soil displacement (rutting) associated with timber harvesting activities on sensitive soils when they are wet or unsaturated.
- SOILS-M-2: Skidding and hauling activities may be restricted during wet periods to prevent damage to soils or road systems within TES Map Units 53, 187, 198, and 202. At the discretion of the Sale Administrator, restrict hauling and skidding during wet periods to prevent damage to soils or road systems. See A-SNF Guidelines for Excessive

Rutting, 6/10/92. These guidelines are applicable to any TES unit but particularly to units 53 187, 198, and 202.

- SOILS-M-3: Slope Limitations for Logging: Limit salvage and removal of trees to areas with slopes less than 40%. Operating on or near the contour, where possible, allows for natural drainage of skid trails, minimizing gully formation within skid trails.
- SOILS-M-4: Contractors shall employ a “felling to lead” method to complement skidding practices, which allows operators to skid in random patterns to minimize soil compaction associated with single skid trails. Similarly, directional felling and end-lining will be used to minimize damage to live vegetation and soils, especially within Streamside Management Zones. Employ a “felling to lead” method to complement skidding practices. This practice involves felling trees toward a predetermined pattern. Allow operators to skid in random patterns to minimize soil compaction associated with single skid trails.
- SOILS-M-5: Employ directional felling and end-lining to minimize damage to live vegetation and soils, especially in Streamside Management Zones.
- SOILS-M-6: Design, locate, and use designated skid trails when skidding logs through areas not receiving treatment (such as unburned or low-severity burn areas).
- SOILS-M-9: Fell dead trees away from the channel in bottom areas along second order streams with defined bed and banks. Avoid felling into or across drainages.
- SOILS-M-10: Fell dead trees across swales and on small, first-order headwater streams without defined bed or banks.
- SOILS-M-12: Minimum filter strip widths in Streamside Management Zones in areas with “slight” erosion hazard: 100 feet (slope distance) on each side of the stream channel from the top of each bank for TES mapping units 53, 178, 183, 186, 191, 193, 197, 198, and 5078.
- SOILS-M-13: Minimum filter width strips in Streamside Management Zones in areas with “moderate” or “severe” erosion hazard: 150 feet (slope distance) on each side of the stream channel from the top of the bank for TES mapping units 52, 54, 55, 181, 182, 187, 189, 192, 202, 5080, 5161, 5162, and 6405.
- SOILS-M-14: Permitted activities within filter strips are limited to:
  - Directional felling of trees away from the channel, and not across it;
  - Ground skidding or end-lining logs out of the area;
  - Skidding perpendicular across channels at designated crossings;
  - Decking of logs and machine piling permitted only along existing roads that are already located within filter strips; however, logs must be decked at least 100 feet

away from the channel and only on the uphill side of the road away from the channel.

- SOILS-M-15: Activities not permitted within filter strips:
  - Skidding up or down the filter strip or within the stream channel;
  - New road construction;
  - Piling and burning of slash;
  - Refueling or servicing of equipment.
- SOILS-M-16: Cross all drainages at designated crossings only. Roads and skid trails need to cross drainages perpendicular to the channel.
- SOILS-M-18: Remove debris generated from product harvest activities away from stream channels. Operating equipment within channels shall be avoided. Removal of material by hand or through end-lining is allowed. NOTE: Slash and debris can be left in first order headwater channels of ephemeral drainages designated by the District watershed representative, where slash can help retain runoff and sediment and provide headcut stabilization.
- SOILS-M-19: If dead trees are harvested from channel banks, directionally fell trees away from the channel, rather than across it.
- SOILS-M-21: Ensure that no temporary road construction occurs within 75 feet of ephemeral channels.
- SOILS-M-22: Minimize the number of skid trails road crossings over drainages and keep them perpendicular to the channel.
- SOILS-M-24: Ensure that logs are not decked within ephemeral streams or swales.
- WILD-M-1: Ensure that oaks with a main stem of 10 inches diameter at root crown (DRC) or greater are not harvested.
- WILD-M-2: Ensure that junipers 18 inches in DRC or greater are not harvested.
- WILD-M-3: In woodland species type, leave at least 100 snags per 100 acres on 40 percent of the pinyon juniper woodland acres in each diversity unit. Snags are defined for this species type as at least nine inches DRC and at least 10 feet tall.
- WILD-M-4: Establish a 100-foot no-action buffer around potential habitat. Complete surveys for Chiricahua leopard frogs prior to any activities in or within 100 feet of potential habitat. Potential habitat consists of any ponds, lakes, or streams in the analysis area. Neither magnesium chloride nor lignin will be permitted on 400 foot sections of roads identified in Appendix F of the BAE.



- WILD-M-5: Maintain a speed limit of 25 miles per hour through all PACs or areas within 0.25 of a mile of PACs to minimize vehicle-owl collisions.
- WILD-M-7: In areas that were formally mixed-conifer habitat and that are proposed for treatments, leave three snags and five dead and down trees per acre. Snags would be selected from the largest trees on site and left in groups of two to six snags.
- WILD-M-8: In areas that were formally ponderosa pine habitat and that are proposed for treatment, leave two snags and three dead and down trees per acre. Snags would be selected from the largest trees on site and left in groups of two to six snags.
- WILD-M-9: Within 0.25 of a mile of PACs, leave per acre five of the largest snags and three logs 12 inches in diameter or greater at the midpoint and 10 feet or greater in length.

### Fuelwood Harvest

Fuelwood, specialty wood products, and other small sales would be located on an additional 6,903 acres of lands. Fuelwood harvest activities may be conducted by commercial operators, or by private individuals. The Forest Service will oversee fuelwood harvest activities by distributing permits to companies and individuals. Fuelwood harvest would entail the removal of smaller-diameter, dead trees from areas marked on maps in Appendix D of the BAE. These maps identify the location of small sale treatments, and are incorporated herein by reference. Conservation/mitigation measures associated with fuelwood and specialty wood products harvest are listed above under salvage logging.

The analysis, resulting take statement, and reasonable and prudent measures within this opinion are based on adherence to the action as described above. The proposed action will be restricted to salvage logging in areas with moderate and high burn severity, will only remove dead trees, and will occur outside of PAC boundaries. Any modifications to the project as described above would likely require reinitiation of consultation.

### STATUS OF THE SPECIES (range wide and/or recovery unit)

The MSO was listed as a threatened species in 1993 (USFWS 1993). The primary threats to the species were cited as even-aged timber harvest and the threat of catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The FWS 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 (USFWS 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, well-structured forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

The U.S. 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 2 National Forests in Colorado and 3 in Utah) support fewer owls. According to the Recovery Plan, 91% of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the Forest Service.

The proposed action is within the Upper Gila Mountains RU, a relatively narrow band bounded on the north by the Colorado Plateau RU and to the south by the Basin and Range-West RU. The southern boundary of this RU includes the drainages below the Mogollon Rim in central and eastern Arizona. The eastern boundary extends to the Black, Mimbres, San Mateo, and Magdalena mountain ranges of New Mexico. The northern and western boundaries extend to the San Francisco Peaks and Bill Williams Mountain north and west of Flagstaff, Arizona. This is a topographically complex area consisting of steep foothills and high plateaus dissected by deep forested drainages. This RU can be considered a "transition zone" because it is an interface between two major biotic regions: the Colorado Plateau and Basin and Range Provinces (Wilson 1969). Most habitat within this RU is administered by the Kaibab, Coconino, Apache-Sitgreaves, Tonto, Cibola, and Gila National Forests. The north half of the Fort Apache and northeast corner of the San Carlos Indian reservations are located in the center of this RU and also support MSOs.

The Upper Gila Mountains RU consists of pinyon/juniper woodland, ponderosa pine/mixed-conifer forest, some spruce/fir forest, and deciduous riparian forest in mid- and lower-elevation canyon habitat. Climate is characterized by cold winters and over half the precipitation falls during the growing season. Much of the mature stand component on the gentle slopes surrounding the canyons had been partially or completely harvested prior to the species' listing as threatened in 1993, however, MSO nesting habitat remains in steeper areas. MSO are widely distributed and use a variety of habitats within this RU. Owls most commonly nest and roost in mixed-conifer forests dominated by Douglas fir and/or white fir, and canyons with varying degrees of forest cover (Ganey and Balda 1989, USDI 1995). Owls also nest and roost in ponderosa pine-Gambel oak forest, where they are typically found in stands containing well-developed understories of Gambel oak (USDI 1995).

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

the PAC habitat within the RU suffered high- to moderate-intensity, stand-replacing fire in the last seven years.

Table 1

<b>Table 1.</b> Some recent influential fires within the Upper Gila Mountains Recovery Unit, approximate acres burned, number of PACs affected, and PAC acres burned.				
<b>Fire Name</b>	<b>Year</b>	<b>Total Acres Burned</b>	<b># PACs Burned</b>	<b># PAC Acres Burned</b>
Rhett Prescribed Natural Fire	1995	20,938	7	3,698
Pot	1996	5,834	4	1,225
Hochderffer	1996	16,580	1	190
BS Canyon	1998	7,000	13	4,046
Pumpkin	2000	13,158	4	1,486
Rodeo-Chediski	2002	462,384	55	~33,000
<b>TOTAL</b>		<b>525,894</b>	<b>84</b>	<b>~43,645</b>

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. USDI (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 980 PACs established on National Forest lands in Arizona and New Mexico (USDA Forest Service, Southwestern Region, December 19, 2002). Based on this number of MSO sites, total numbers in the United States may range from 980 individuals, assuming each known site was occupied by a single MSO, to 1,960 individuals, assuming each known site was occupied by a pair of MSOs. The Forest Service Region 3 data are the most current compiled information available to us; however, survey efforts in areas other than National Forest System lands have likely resulted in additional sites being located in all Recovery Units. Currently, we estimate that there are likely 12 PACs in Colorado (not all currently designated) and 105 PACs in Utah.

Since the owl was listed, we have completed or have in draft form a total of 125 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 350 PACs. The form of this incidental take is almost entirely harm or harassment. These consultations have primarily dealt with actions proposed by the Forest Service, Region 3. However, in addition to actions proposed by the Forest Service, Region 3, we have also reviewed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, National Park Service, and Federal Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military and sightseeing overflights, and other activities. Only one of these projects (release of site-specific owl location information) has resulted in a biological opinion that the proposed action would likely jeopardize the continued existence of the MSO.

In 1996, the FWS issued a biological opinion on Forest Service Region 3's adoption of the Recovery Plan recommendations through an amendment of their Forest Plans. In this non-jeopardy biological opinion, we anticipated that approximately 151 PACs would be affected by activities that would result in incidental take of MSOs, with approximately 91 of those PACs located in the Upper Gila Mountains RU. In addition, we completed a reinitiation of the 1996 Forest Plan Amendments biological opinion which anticipated the additional incidental take of five MSO PACs in Region 3 due to the rate of implementation of the grazing standards and guidelines, for a total of 156 PACs. To date, consultation on individual actions under the amended Forest Plans have resulted in 265 PACs adversely affected, with 147 of those in the Upper Gila Mountains RU.

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

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

Elevation within the proposed project area ranges from 6,400 to 7,700 feet. The Sitgreaves National Forest, including the proposed action area, lies on a portion of the Colorado Plateau on and to the north of the Mogollon Rim. From the rim crest, drainages flow north into the Little Colorado River Watershed. The terrain in the area is flat, with a gradient of one to five percent, and is bisected by wide, shallow drainages (USFS 2002). The climate in the area, which occurs along the Mogollon Rim, is dry, with precipitation occurring primarily during summer monsoons and winter snows. This area has received lower than average rainfall since 1997, and is considered to be under drought conditions.

Prior to the Rodeo-Chediski fire, a ponderosa pine overstory dominated the vegetative composition on the Sitgreaves National Forest where the fire occurred. Isolated pockets of mixed-conifer exist at the higher elevations along the Mogollon Rim and at the upper reaches of

drainages along the rim. The ponderosa pine and mixed-conifer communities transition to a pinyon-juniper forest generally north of Highway 260 at the northern perimeter of the fire, with ponderosa pine stringers found primarily within the drainages flowing to the north. Lower-elevation sites within the fire are pinyon-juniper dominated (USFS 2002).

Surface fuel composition prior to the fire is described as naturally occurring needle cast, small limbs, branch wood, downed logs, and snags in addition to untreated activity fuel residue and annual grasses and forbs. Fuel loading varied but was rated as light to moderate in most areas (USFS 2002). Fuel moisture percentages prior to the fire were at an unprecedented low due to prevailing drought conditions in the area for the preceding 24 months. Pine densities exceeding 1500 stems per acre with a 100 percent understory crown closure were commonly found throughout the area prior the Rodeo-Chediski wildfire.

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

There are 20 MSO PACs within the proposed action area: 11 on the Black Mesa Ranger District of the Apache-Sitgreaves National Forest, and nine on the Pleasant Valley Ranger District, Tonto National Forest. These 20 PACs represent 3.2% of the 618 PACs identified in the Upper Gila Mountains RU and 2.0% of the 980 PACs located in the Forest Service's southwest region. In addition, before the fire there were approximately 6,000 acres of mixed-conifer and pine-oak stands designated as restricted habitat for the MSO (USFS 2002).

All 20 of the PACs in the action area were impacted by the fire to some level due to its intensity and duration. Within the action area, habitat for MSOs has been substantially modified by the Rodeo-Chediski fire. Your staff provided the following breakdown of burned areas on and off of Forest Service lands:

- The fire burned a total of 460,182 acres.
- 185,151 acres are on the Apache-Sitgreaves and Tonto National Forests.
- Of the Forest Service acreage, 60,000 acres were mixed-conifer and pine-oak.
- 48,000 of those acres were outside of PACs, with 12,000 acres in PACs.
- 276,335 additional acres of White Mountain Apache Tribal lands burned.
- 8,696 acres of private lands also burned.

The BAE notes that the highest concentration of MSOs are along the Mogollon Rim in the northern portion of the Tonto National Forest and the southern portion of the Apache-Sitgreaves National Forest. PACs were distributed almost continuously across the face of the Mogollon Rim, except for a 15-mile wide gap caused by the Dude Fire in 1990. Twenty PACs are located within the Rodeo-Chediski fire perimeter. Fire burned through portions of each of these PACs, at varying intensities. Most of the PACs are located on steep slopes or in deep canyons which acted as funnels for the fire in many instances.

Monitoring to determine the status of MSO in these areas was completed in 2003. Past occupancy and reproductive history is summarized in Table MSO-1 of the BAE and is incorporated herein by reference. This table verifies occupancy in five of the PACs in 2002 prior to the fire. Data provided by your staff indicates that, for many of the PACs within the burned area, either monitoring was informal, or no data were collected for most of 2002. Similar data are shown for most PACs in 1999, 2000, and 2001. However, several of these PACs have supported successfully reproducing owls for multiple years. Occupancy has been confirmed for all PACs at some time, and often repetitively, between 1989 and 1997. Young were confirmed for 13 PACs during this time period. Pairs were confirmed for 18 PACs at some time during this time period, and repetitively for many of them. The Forest Service has determined that all PACs on both the Apache-Sitgreaves and Tonto National Forests are considered occupied (USDA Forest Service, Southwestern Region, December 19, 2002).

Initially we recommended that monitoring not be completed in 2002 following the fire as we did not want to cause additional stress to the owls when we believed that it was too late in the breeding season to obtain reasonable results. Your staff completed one season of formal monitoring during 2003, as summarized in Table 2 in Appendix C.

Spotted owls are known to exhibit site tenacity, with individual adults occupying the same home ranges for long periods of time, and probably often for life. One study found that, of 25 nests of Northern spotted owls that were checked in two or more years, 17 nests (or 68%) were used more than once (Forsmann *et al.* 1984). Biologists on the Coconino and Lincoln National Forests have observed that MSOs often return to home ranges and nests following disturbances such as wildfire. Bond *et al.* (2002) determined that, at least in the short-term, MSOs are known to return to or remain within their territories following wildfires. For the Rodeo-Chediski fire, this statement is supported by the location of owls associated with 11 of the 20 PACs in the burn area during 2003.

Within the proposed action area, suitable habitat remains. Your staff reports that burn severity was high on approximately 43,983 acres, moderate on 51,681 acres, and low on 69,218 acres. An additional 12,496 acres were classified as “unburned”. With respect to protected habitat, Table 3 in Appendix C notes that 90% or higher of PACs 204, 503, and 504 were moderately or severely burned. In addition, 50% or more of the acreage in PACs 201, 202, 203, 205, 206, 208, 214, 502, 509, and 510 was moderately or severely burned. With respect to restricted habitat, approximately 6,000 acres of mixed-conifer were classified as restricted habitat prior to the fire. According to information provided by your staff, there are now 4,306 acres of mixed-conifer habitat that qualifies as restricted habitat under the definition within the Recovery Plan. Of that acreage, 789 acres are identified as meeting target conditions for restricted mixed-conifer habitat, meaning they meet conditions believed necessary for supporting nesting or roosting owls, if managed properly over time. An additional 1.83 acres are defined as meeting threshold conditions, meaning they meet minimal levels of conditions that should be maintained. There are an additional 15,266 acres of pine-oak restricted habitat, with 1,313 acres meeting target conditions.

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

Within the proposed action area, there are several State, Tribal, local, and private actions which may have already affected MSOs, or that will occur contemporaneously with the proposed action. As previously noted, the Rodeo-Chediski Fire burned approximately 462,384 acres in 2002. The BAE notes that, of the total fire acreage, approximately 147,500 acres, or 32 percent of the area, was impacted by very intense fire resulting in high burn severity; 99,600 acres, or 22 percent, experienced moderate burn severity, and 215,200 acres, or 46 percent, experienced low burn severity or remained unburned. "High severity" was used to define those areas where no needles remain on the trees, while "moderate severity" includes those areas having as much as 60 to 100 percent mortality, but with brown needles remaining attached to the tree. "Low severity" areas are those where the canopy was scorched, but most of the trees were not killed. Unburned areas include those where there was little or no canopy damage, but where surface fire did move through the area (USFS 2002). While the fire was not a management action of any agency or entity, its impacts in the area need to be considered when reviewing the environment within the action area.

Historical (in the last 15 years) fuels management has occurred in this area. The Forest Service provides maps on the Internet that detail these areas within the Rodeo-Chediski burn for previous fuels treatments, pre-commercial thinning, commercial timber sales, prescribed fire treatments, and livestock grazing. These figures can be found at [http://www.fs.fed.us/r3/asnf/bboard/rc\\_fire\\_effects.htm](http://www.fs.fed.us/r3/asnf/bboard/rc_fire_effects.htm).

During and following the Rodeo-Chediski fire, your staff took management actions related to the fire itself. During the fire, suppression efforts included construction of bulldozer lines for fire breaks, aerial ignition of fires to reduce fuel loading, ignition of fires on the ground to reduce fuel loading, and aerial application of liquid chemical fire-retardant to slow the advance of the wildfire. The Biological Opinion for suppression of the Rodeo-Chediski Fire (file number 02-21-02-F-0224) includes additional detail regarding the actions and their effects on MSOs, and is incorporated herein by reference. Table 4 in Appendix C of this opinion summarizes these actions within PAC boundaries.

Some PACs were impacted by more suppression actions than others. This is particularly true for PACs 503, 504, 508, and 510, which each experienced more than one suppression action.

The Rodeo-Chediski Fire was not the first fire in this area. Previous fires include the Elk Fire, Day Fire, Black Fire, and Bruno Fire. The dates and acreages of these fires are summarized in Table 5 in Appendix C.

State actions in the proposed action area have been primarily limited to work along State Route 260 through the northern edge of the burn area. Consultations for projects completed by both the State and Federal Highways have included road improvements between Payson and Heber and near Heber-Overgaard, creation of turnouts, improvement of Forest Road 512 (Young Road), installation of guardrails, repair of slide areas, vegetation thinning projects, and shoulder reconstruction and tree removal.

Private inholdings within the burn area are substantial when including the towns of Forest Lakes, Heber-Overgaard, and Linden in addition to the parcels scattered throughout Forest Service lands. At Forest Lakes, private lands are still being developed. Additionally, there is a large parcel of approximately 100 acres of private lands at the junction of Forest Roads 86 and 87. This larger parcel is being subdivided into smaller 10-acre parcels, which are being developed for private residences. Currently, there are approximately four new homes under construction in this area. Private land farther south on Forest Road 87 was also developed. In the Heber-Overgaard area, particularly on the border with Forest Service lands, private homes that were lost during the fire are being rebuilt and additional private properties continue to be developed as permanent or summer residences.

Local actions include those taken by the towns of Forest Lakes, Heber, and Overgaard; however, Forest Lakes is the only one of these towns located near MSO PACs or suitable habitat. Work on reducing fuel loads has been completed by the Forest Service in order to protect the towns like Forest Lakes. City limits are adjoining Forest Service land boundaries, and any construction projects for homes, businesses, or infrastructure could have effects to Forest Service lands. However, none of the MSO PACs were within this joint boundary area.

As previously noted, the Rodeo-Chediski Fire began on the White Mountain Apache Tribal lands and burned approximately 278,183 acres. Additionally, 8,774 acres of private land were burned in the proposed action area. Habitat on Forest Service lands within the proposed action area are contiguous with habitat on Tribal lands. In fact, some of the owls in PACs designated on Forest Service land likely used Tribal lands outside the action area. Additionally, an unknown number of PACs were burned on Tribal lands to an unknown degree of severity and extent. The Bureau of Indian Affairs (BIA) has largely completed salvage logging on the Reservation outside of the action area. The BIA hauled logs salvaged on Tribal lands across Forest Service roads throughout the proposed action area from December 2002 through mid-summer 2003. No new roads were created. The BIA resurfaced some of the existing roads with gravel to accommodate heavier log traffic. The BIA used the following roads: FR 101 to FR 512 on the Tonto National Forest; FR 107 to 260, FR 146 to 260, FR 196 to FR 300, FR 168 to FR 300, FR 162A to FR 300, FR 9559F to FR 300, FR 110 to FR 300, FR 95693, FR 9571D, and FR 95710. Biological Opinion 2-23-03-F-07 provides the specific number of truckloads on individual roads and additional project details, and is incorporated herein by reference.

## 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 reasonably certain to occur.

The proposed action is unusual in that it occurs within an area after a severe disturbance. As a result of the wildfire and the way in which spotted owl habitat has been extremely altered; the



fact that sufficient monitoring, while ongoing, has not yet been completed to clarify owl occupancy and use of the area; the fact that PAC boundaries will ultimately need to be re-drawn; and the fact that owls remained in association with at least 11 out of the 20 PACs burned in the fire, our analysis in this opinion has varied somewhat from previous MSO opinions. We have, using GIS layers provided by your staff, attempted to determine where restricted habitat and unburned or low burn-severity areas remain in relation to PACs. Where the burn-severity was moderate or high within PACs, we would anticipate that owls have shifted their foraging, roosting, and nesting areas to areas that might otherwise have been less suitable prior to the fire.

There were 18 detection sites in 2003 associated with seven PACs and one area outside of PACs. Nine of the detection sites are in moderate and high burn-severity areas, while nine are in unburned or low burn-severity areas. However, of the nine detections in moderate or high burn severity areas, all are associated with canyon habitat, where canyon walls likely provide the necessary microclimate to encourage owls to remain in these areas, at least for the short-term. We would anticipate that, in these instances, owls are foraging at least in part outside of canyons and moderate or high burn severity areas. The Comment/Concern column of Table 6 below attempts to explain our rationale in reaching a conclusion for each PAC and associated impacts of road use.

#### Road Construction, Maintenance, and Use

The different types of road construction, maintenance, and use are described in the Description of the Proposed Action section above, as are the mitigation measures associated with each activity. In summary, the following types of road use would occur:

- 190 miles of road use within 0.25 of a mile of restricted habitat
- 8,200 logging trucks passing within 0.25 of a mile of restricted owl habitat
- Fewer than 5,000 logging trucks passing through or within 0.25 of a mile of owl PACs on the Sitgreaves portion of the Apache-Sitgreaves National Forest
- No logging trucks passing within 0.25 of a mile of unburned nest sites
- No road construction, or road maintenance within 0.25 of a mile of unburned nests
- No hauling on the south end of FR 87, which passes through PAC 207, during the breeding season

Each type of activity is listed below in more detail, followed by a discussion of anticipated effects to MSOs, if any. Unless specifically mentioned, there are no timing restrictions, either for time of day or time of year, for the activities listed below.

1. Replacing or removing culverts, restoring natural drainage patterns, and installing drainage dips and other surface water diversions. The Forest Service has committed to designing these features in such a way as to stabilize stream banks and river bottoms and improve road

conditions, and notes that new culverts would be designed to match natural stream gradients and provide natural streambottom characteristics. In the long-term these activities will benefit the MSO, but short-term noise disturbance of large trucks or mechanized equipment operating within close proximity of PACs, roost sites, or foraging areas to perform excavation and installation activities are expected. The exact location of these crossings is not known. Those roads identified in Appendix C of the BAE as scheduled for this type of work are identified below under each PAC.

2. Extending or enlarging water-bars on the uphill side of roads as needed to insure that all flow from ditches or drainages is diverted across the road. There is the potential for heavy equipment used in creating water bars to create noise disturbance if these activities take place in close proximity to nests, roosts, or foraging areas for MSOs. As with the culvert and drainage improvements discussed above, the exact location of water-bars is not known.

3. Constructing road turnouts. Potential effects to MSOs include short-term noise disturbance should they be in close proximity to nesting, roosting, or foraging areas of MSOs. In addition, there will be vegetation losses, potentially within PACs or foraging areas, where turnout areas are constructed. The Forest Service has committed, in Conservation Measure Roads-M-3, to not create any additional turnouts from the Gentry Lookout Tower west on Forest Service Road 30 for one mile, due to spotted owl concerns in this area. The exact number and location of turnout construction are not known at this time.

The Forest Service will use turnouts constructed by the BIA for their salvage logging effort. The BAE notes that the portion of Forest Road 300 between Forest Road 87 and Highway 260 passes within 0.5 of a mile of seven MSO PACs, but that the majority of the road construction and maintenance along this section of the road, including turnouts and road surfacing, was completed by the BIA.

4. Use of roads by logging trucks. Table MSO-5A within the BAE estimates the number of log trucks to pass within 0.25 of a mile of seven PACs on the Apache-Sitgreaves National Forest, as well as those within 0.25 of a mile of PAC 209 on Forest Road 86. That information is summarized in Table 7, Appendix C. Table MSO-5A notes that these figures represent the number of *loaded* log trucks passing within 0.5 of a mile, indicating that these figures would be doubled to account for the number of loaded and unloaded log trucks passing these PACs on a daily basis. The total number of loaded and unloaded trucks is listed in Table 7 in Appendix C. We would anticipate noise disturbance due to use of roads in close proximity to owls, as well as the increased likelihood for truck-owl collisions. While the BAE notes that road closures will be in effect, and that the number of logging trucks will actually represent a reduction in overall traffic on these roads during salvage logging, we would note that logging trucks are louder than normal traffic, potentially resulting in more disturbance to owls. Additionally, they present a larger profile than the average passenger vehicle, which could contribute to increased vehicle-owl collisions.

Data indicate that owls have been known to be hit by vehicles (USDI 1995; Gutierrez *et al.* 1995, USDI 1992). An owl was found dead adjacent to Highway 260 in 1999 during a telemetry study associated with studying the effects of road widening on owls in a PAC adjacent to the highway.

A necropsy report confirmed that the cause of death was blunt trauma likely from collision with a moving vehicle (USDI 1992). Three owls have been struck and killed by vehicles in the last few years on highways both on and off of Forest Service lands in Arizona and New Mexico (S. Hedwall, USFWS, pers. comm. 2002). While most of the owls have been hit on highways where speeds are greater than would be anticipated for logging trucks on Forest Service roads, it is important to note that the probability that owls may be hit by vehicles depends on a variety of factors including the speed the vehicle is traveling, the number of vehicles, the time of day, and the use of the area by owls.

5. Applying gravel to road surfaces and/or borrow (materials brought in from another area) to segments that are maintained on poor soils or near streams. Elevated noise levels due to the use of trucks and/or mechanized equipment during the application of gravel is a potential disturbance to MSOs should these activities occur in close proximity to MSO nesting, roosting, or foraging areas. The increased truck traffic into the area for the hauling and deposition of gravel also increases the likelihood for truck-owl collisions. The exact locations of road surfacing activities are not known at this time.

6. Installing sediment filters between streams and road fills. There is the potential for additional noise disturbance from this action should it occur within close proximity to nesting, roosting, or foraging owls. The exact locations of this type of action are not known at this time. We do not anticipate that this activity will result in much noise generation.

7. Surfacing road segments and hardening crossings. There is the potential for additional noise disturbance from this type of action should it occur within close proximity to nesting, roosting, or foraging owls. The exact location of this type of action is not known at this time. In addition, improvement of roads and stream crossings may open up areas to the public that are currently not in use. Should this occur, there is the potential for an increased human disturbance in areas currently used by owls. There would also be an increased number of vehicles traveling on roads currently not in use, and therefore an increase in the likelihood for vehicle-owl collisions. While the roads would be closed to the public during salvage logging operations, and would be closed following completion of all salvage logging, the roads would be available for use during the three-year period when salvage logging trucks are not in use.

8. Installing road-guide signs. We anticipate no adverse effects.

9. Dust abatement with magnesium chloride, lignin or water on approximately 49 miles of roads. This portion of the proposed action could result in additional noise disturbance due to truck traffic and an increased number of trucks in the area, which could increase the likelihood for increased truck-owl collisions.

10. Opening 100 miles of roads that are currently closed to facilitate salvage logging. Although these roads would be closed and re-seeded after harvest activities have been completed, they would be open and available to the public for use during a 3-year period in salvage logging operation areas, and for a 10-year period in fuelwood harvest areas. During construction, there would be increased noise disturbance, potentially in close proximity to nesting, roosting, or foraging owls. There would also be a greater number of construction trucks in this area, increasing the likelihood for vehicle-owl collisions. In addition, opening 100 miles of roads

would allow for increased human presence in areas currently not used by the general public, increased vehicular traffic in these same areas, and an increased likelihood for owl-vehicle collisions. While the FWS supports the commitment, in Roads M-9, to obliterating these road beds, that action in itself constitutes additional noise disturbance in these areas, although short-term in nature.

11. Constructing 20 miles of new temporary roads to access treatment areas where slopes are less than 40 percent. Although the Forest Service has committed to rehabilitating and closing these roads following completion of the proposed action, the FWS has the same concerns as stated above in item 10. Obliteration of roads following the action will create short-term adverse noise effects.

Noise disturbance can disrupt activities such as breeding, feeding, and roosting. We found no studies that focused on the noise disturbance generated from a long-term, sustained activity like the proposed action, which will involve noise from road construction, maintenance and use, tree felling, heavy equipment, and vehicular noise for periods of up to three years in close proximity to owls. Existing studies on noise indicate that the response of wildlife to noise disturbance is complex, being neither uniform nor consistent. Delaney *et al.* (1997) reviewed literature on the response of owls and other birds to noise and concluded the following: 1) raptors are more susceptible to disturbance-caused nest abandonment early in the nesting season; 2) birds generally flush in response to disturbance when distances to the source are less than approximately 200 feet and when sound levels are in excess of 95 dBA; and 3) the tendency to flush from a nest declines with experience or habituation to the noise, although the alert response (i.e., head movements or agitated behavior) cannot be completely eliminated by habituation. Owls have more sensitive hearing than most other birds, and noise disturbance can have a variety of adverse effects because they can:

- increase the bird's metabolic rate (the rate at which all chemical reactions occur within a living organism, including the digestion of foods) by making it more active. Increased activity can, in turn, deplete the animal's energy reserves (Bowles 1995).
- cause the bird to expand its home range. Birds usually return to normal use patterns when humans are not present (Bowles 1995), however, energy expended on increased home ranges can decrease the bird's ability to successfully reproduce and raise young.
- displace the bird permanently, if the species is sensitive to the presence of people. If animals are denied access to areas that are essential for reproduction and survival, then that population will decline. Likewise, if animals are disturbed while performing behaviors such as foraging or breeding, that population will also likely decline (Knight and Cole 1995).

We anticipate that these effects could occur for this action at some level, and we believe that the above information demonstrates that birds may respond to disturbance during the breeding season by:

- abandoning their nests or young;

- altering their behavior such that they are less attentive to the young, which increases the risk of the young being preyed upon;
- disrupting feeding patterns;
- exposing young to adverse environmental stress (Knight and Cole 1995).

It should also be noted that disturbance during years of diminished prey base, such as those during a drought like the current one, can result in lost foraging time which, in turn, may cause some raptors to leave an area or to not breed at all (Knight and Cole 1995). The effects of the fire on prey base and habitat availability also contribute to the abilities of the owls to survive, forage, and breed in this area.

Cumulatively, we believe that noise disturbance will result from road maintenance, while use of the roads by trucks will add additional noise disturbance and increase the likelihood of truck-owl collisions. To determine the extent of these impacts, we evaluated the proposed action in relation to PACs. However, because of habitat destroyed by the fire, and the uncertainty surrounding the exact locations of owls previously using these PACs, we have also considered areas of higher quality habitat in close proximity to either PACs or owls detected within the proposed action area following the fire in 2003. It should be noted that the Recovery Plan indicates that the median size of an area enclosing 75 percent of the foraging locations for 14 pairs of radio-marked owls was 595 acres and, therefore, a 600 acre PAC "...should provide a reasonable amount of protected habitat and should provide for the nest site, several roost sites, and the most proximal and highly used foraging areas (USDI 1995)." Because only 75% of the foraging occurs within this area, it is reasonable to expect that foraging will take place outside of the 600 acre delineation.

While the Recovery Plan notes that owls will forage in a wide variety of forested habitat types, it is important to note that, due to the fire in this area, foraging habitat has become limited. As noted in the Environmental Baseline above, 60,000 acres of mixed-conifer and pine-oak habitat were lost in and around PACs. Total forested area burned within the proposed action area was 185,151 acres, of which 52%, or 95,664 acres, had moderate or high severity burns. Within the PACs themselves, 6,449 acres had moderate or high severity burns. Because of the amount of habitat lost, foraging area is now limited, especially considering the number of PACs in the area. The remaining foraging habitat is therefore important to the survival of owls in this area.

Table 6 provides a breakdown of which roads will be used for log hauling, and which will undergo some type of maintenance or construction. Roads are listed under each PAC.

#### Logging Deck Construction and Use

The proposed action involves the construction and use of an unknown number of logging decks, as described above under the Description of the Proposed Action. Potentially, each deck will require clearance of up to 0.25 acre within areas that experienced moderate or high burn severities. Logging decks would be rehabilitated following their use by scarifying the areas and

re-seeding them. Slash and woody debris would be placed over these areas to minimize erosion.

It is difficult to assess the effects of logging deck construction and use on owls because the number and location of decks is uncertain. Little habitat loss should result, as they would be constructed in areas of moderate and high burn severity, where only dead trees remain. However, should decks be placed immediately adjacent to areas of unburned or low burn severity, or areas with restricted habitat, the potential exists for noise disturbance to MSO to result from their construction, use, and rehabilitation.

Road	Activity <sup>1,2</sup>	Proximity to PAC (mi) <sup>3</sup>	Proximity to Owl (mi) <sup>3</sup>	Comments/Anticipated Effects
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips	0.20	0.64	Potential for owls to be using unburned and low burn-severity areas between the PAC and FR 300. We anticipate: - Noise disturbance from road construction/maintenance and use; - Increased likelihood of owl-vehicle collisions.
FR 196	No road maintenance or construction activities; unknown number of trucks and contractor vehicles	0.20	0.68	Road lies adjacent to corridor of low burn severity that leads into larger patch of similar habitat to the north-northwest. We anticipate: - Noise disturbance from road use; - Increased likelihood of vehicle-owl collisions.
FR 196D	No road maintenance or construction activities; up to 1,440 logging trucks; unknown number of contractor vehicles.	Overlaps PAC boundary	0.51	Although road overlaps the PAC boundary, it travels through an area of moderate and high burn severity. Some 0.11 of a mile of the road is in a low severity burn area that is part of the best remaining habitat to the north and northwest of the PAC. We anticipate: - Noise disturbance from road use; - Increased likelihood of vehicle-owl collisions.
FR 196E	2.75 miles of drainage structures and road use; 160 logging trucks; unknown number of contractor vehicles	0.20	0.65	0.18 of a mile of this road is in a low burn-severity area that is part of the best remaining habitat to the north and northwest of the PAC. We anticipate: - Noise disturbance from road use; - Increased likelihood of vehicle-owl collisions.

PAC 202 – 67.65% moderate and high burn severity; single owl confirmed post-fire in 2003.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 920 log trucks; 1,380 contractor vehicles	0.12	0.80 and 1.22	Multiple portions of the road travel through unburned or low burn-severity areas in the best remaining habitat to the north and northeast of this PAC. We anticipate: <ul style="list-style-type: none"> <li>- noise disturbance from road construction/maintenance activities and road use;</li> <li>- removal of small areas of vegetation at unspecified locations for double lane construction and turnarounds;</li> <li>- increased likelihood of owl-vehicle collisions.</li> </ul>
Temp. Roads	Westernmost road @ T11N, R15E, sec. 34	0.24	1.0+	Portions of this road are within areas of low burn severity and restricted habitat, and are within some of the best remaining habitat surrounding this PAC. We anticipate: <ul style="list-style-type: none"> <li>- noise disturbance from road construction/maintenance activities and road use;</li> <li>- noise disturbance for road rehabilitation following completion of salvage logging activities;</li> <li>- removal of vegetation for road construction;</li> <li>- increased likelihood of owl-vehicle collisions.</li> </ul>
Temp. Road	Easternmost road @T11N, R15E, sec. 34	0.12	1.0+	Portions of this road would be within areas of low burn severity and restricted habitat, and are within some of the best remaining habitat surrounding this PAC. We anticipate: <ul style="list-style-type: none"> <li>- noise disturbance from road construction/maintenance activities and road use;</li> <li>- noise disturbance for road rehabilitation following completion of salvage logging activities;</li> <li>- removal of small areas of vegetation at unspecified locations for double lane construction and turnarounds;</li> <li>- increased likelihood of owl-vehicle collisions.</li> </ul>

PAC 203 – 66.09% moderate and high severity burns.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips.	0.80	1.3 and 1.4	Road travels through an area of unburned and low burn severity areas to the west of the PAC that appears to be the most suitable area, outside of the PAC, for owls. Owls may travel through the area as a corridor. We anticipate: <ul style="list-style-type: none"> <li>- noise disturbance from road construction/maintenance activities and road use;</li> <li>- removal of small areas of vegetation at unspecified locations for double lane construction and turnarounds;</li> <li>- increased likelihood of owl-vehicle collisions.</li> </ul>
Temp. Roads	@ T11N, R15E, sec 34	0.75	1.5	Lies on the opposite side of an area burned at high severity. We believe it is unlikely that the owls from PAC 203 would be foraging near the road construction site.
PAC 204 – 96.47 % moderate and high severity burns. No response to monitoring in 2003. Owl pair in 1996, male owl in 1998, with no formal monitoring since that date.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips	0.17	Unknown	Because all of the area between the PAC and FR 300 burned at moderate and high severities, as did the majority of this PAC, we do not anticipate noise disturbance to owls associated with this PAC from construction/maintenance activities along this road.
PAC 205 – 61.54% moderate-and high-burn severity.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips.	0.24	1.46	Road is within the best remaining habitat on Forest Service lands, through unburned and low burn-severity areas, and adjacent to restricted habitat. We anticipate: <ul style="list-style-type: none"> <li>- Noise disturbance may result from road use actions;</li> <li>- loss of small areas of vegetation for double lane and turnaround construction;</li> <li>- increased likelihood of truck-owl collisions.</li> </ul> <p>Alternatively, the owl may be foraging south off of Forest Service lands.</p>
Temp. Roads	@T10N, R16E, sec. 6	0.80	1.6	Lies in unburned area and restricted habitat in block of best remaining habitat associated with this PAC. We anticipate: <ul style="list-style-type: none"> <li>- noise disturbance from road construction/maintenance activities and road use;</li> <li>- noise disturbance associated with rehabilitation of the road following completion of salvage logging;</li> <li>- removal of vegetation for road construction;</li> <li>- increased likelihood of owl-vehicle collisions.</li> </ul>



PAC 206 – 50.71% moderate and high burn severity.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips	0.35	Unknown	Road lies in multiple sections of unburned and low burn severity areas that represent the largest block of remaining habitat north and west of this PAC. We anticipate: - Noise disturbance may result from road use actions; - loss of small areas of vegetation for double lane and turnaround construction; - increased likelihood of truck-owl collisions.
Temp. Roads	@T10N, R16E, sec. 4	0.55	Unknown	Road would be constructed in a narrow strip of low burn-severity. However, this area is surrounded by moderate and high burn severity, and is isolated from the larger block of habitat to the west, as described above under FR 300. We do not anticipate effects to the owls from the use of this road.
PAC 207 – 37.34% moderate and high burn severity.				
FR 300	27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing; 1,440 logging trucks; 2,160 contractor vehicle trips.	0.04	Unknown	FR 300 bisects a large area of unburned and low burn-severity area which is part of a contiguous block of the best remaining habitat (including some restricted habitat) that passes through the PAC on a southwestern to northeastern diagonal. We anticipate: - Noise disturbance may result from road use actions; - loss of small areas of vegetation for double lane and turnaround construction; - increased likelihood of truck-owl collisions.
FR 87	1.91 miles of spot surfacing, spot borrowing, drainage structures, turnout and double lane construction, and clearing projects. Those portions of the road within PAC boundaries would not be used during the breeding season.		Unknown	Road runs adjacent to, and dead ends into, the PAC. Road runs through a large, contiguous patch of unburned and low burn severity area, including that found in the eastern half of the PAC. We anticipate: - Noise disturbance may result from road use actions; - loss of small areas of vegetation for double lane and turnaround construction; - increased likelihood of truck-owl collisions.
FR 9564A	2.63 miles of spot borrow and drainage structures	0.27	Unknown	Road lies in an area of high and moderate burn severity. For owls foraging in the unburned and low burn severity areas southwest of this PAC, - Noise disturbance may result from road use actions;
FR 9568M	1.31 miles of spot borrow and drainage structures	0.24	Unknown	Within an area of moderate and high burn severity. Because of the burn-severity, we do not anticipate owls would be present in areas closest to this road, and anticipate that no disturbance will occur from road use.

FR 9563V	1.7 miles of drainage structures.	0.29	Unknown	Majority of road in an area of moderate and high burn-severity. Last 0.52 of a mile in unburned and low burn-severity area, where owls may potentially occur. Anticipate: - Noise disturbance associated with road maintenance/construction and use; - Increased likelihood of vehicle-owl collisions.
Temp. Roads	One road @T10N, R16E, sec. 4	0.14		Within in an area of moderate and high burn severity. Because of the burn severity, we do not anticipate owls would be present in areas closest to this road, and anticipate that no disturbance will result from road use.
Temp. Road	@T11N, R16E, sec. 32 and T10N, R16E, sec. 6	0.03		Road construction, use, and rehabilitation would occur within restricted habitat in close proximity to the PAC. We anticipate: - noise disturbance from road construction/maintenance activities and road use; - noise disturbance associated with rehabilitation of the road following completion of salvage logging; - removal of vegetation for road construction; - increased likelihood of owl-vehicle collisions.
Temp. Road	@T11N, R16E, sec. 32	0.38		Within in a large block of high burn-severity. We do not anticipate owls would be present in areas closest to this road, and anticipate that no disturbance will result from road use.
PAC 208- 54.24% moderate and high burn severity; male owl detected post-fire in 2003.				
FR 9566Q	0.67 of a mile proposed or spot borrowing and drainage structures; use by 128 trucks	0.036		Best remaining habitat exists on the western half of the PAC, as well as to the northwest, where this road would lie. We anticipate: - Noise disturbance due to road construction/maintenance, and use; - Increased likelihood of vehicle-owl collisions.
FR 9567H	1.45 miles proposed for drainage structures; use by 128 trucks <sup>2</sup>	0.12		See comments for FR 9566Q above.
PAC 209 – 46.83% moderate or high burn severity.				
FR 86	15.37 proposed for spot borrow, drainage structure, turnout and double lane construction, and clearing projects; use by 684 log trucks and 1,026 contractor vehicles	Travels for 0.75 of a mile through PAC	0.08, 0.21, 0.23, and 0.55	Because the road is within the PAC, as well as within unburned and low burn-severity areas and restricted habitat, we anticipate: - Noise disturbance due to road construction/maintenance, and use; - Increased likelihood of vehicle-owl collisions - Minor vegetation losses along roadsides where turnouts are constructed or double lanes installed.
FR 9568I	1.64 miles of drainage structures; road use as described for FR 86	0.083	0.85	Because the road is located in the center of a large patch (0.75 of a mile at its narrowest point) of moderate and high burn-severity, and is outside of the PAC boundaries, we do not anticipate disturbance from the use of this road.

FR 9564A	2.63 miles of spot borrow and drainage structure; road use as described for FR 86	0.25	0.19	<p>With the exception of the 0.10 of a mile of the road closest to the PAC, this road travels through a large patch of moderate and high burn severity approximately 0.75 of a mile in width at its narrowest point. The 0.10 of a mile closest to the PAC lies in low severity burn areas, and in close proximity to restricted habitat. We anticipate the owls will use areas southwest of the PAC due to their location in this PAC in 2003. For use of this portion of the road we anticipate:</p> <ul style="list-style-type: none"> <li>- Noise disturbance due to owls road construction/ maintenance and use;</li> <li>- Increased likelihood of vehicle-owl collisions.</li> </ul>
FR 9563V	1.7 miles of drainage structures; road use as described for FR 86	0.11	0.14	<p>0.45 of a mile of the road travels through unburned and low burn-severity areas and restricted habitat due south of owl locations for 2003. We anticipate:</p> <ul style="list-style-type: none"> <li>- Noise disturbance due to road construction/maintenance and vehicle use;</li> <li>- Increased risk of truck-vehicle collisions.</li> </ul>
FR 9562P	1.33 miles proposed for drainage structures; road use as outlined for FR 86	0.24	0.46	<p>(Dead ends into FR 86 at 0.24 of a mile from the PAC boundary). The road travels through 0.70 of a mile of unburned and low burn-severity areas and restricted habitat, and is due south of owl detection sites for 2003. We anticipate:</p> <ul style="list-style-type: none"> <li>- Noise disturbance to owls from road construction/maintenance and vehicle use;</li> <li>- Increased risk of truck-vehicle collisions.</li> </ul> <p>This road is due south of owl detection sites for 2003.</p>
FR 9562P1	Drainage improvement; road use as outlined for FR 86	0.53	0.75+	<p>(Dead ends into FR 9562P at 0.53 of a mile from PAC boundary). Only the last 0.12 of a mile of the road before its dead end into FR 9562P is within unburned and low burn-severity areas, with the remainder existing in the same large block of moderate and high severity burn discussed above for this PAC. This road is due south of owl detection sites for 2003. We anticipate:</p> <ul style="list-style-type: none"> <li>- Noise disturbance due to road construction/maintenance and vehicle use;</li> <li>- Increased risk of owl-vehicle collisions.</li> </ul>

PAC 210 – 31% moderate or high burn severity.				
FR 86	15.37 proposed for spot borrow, drainage structure, turnout and double lane construction, and clearing projects; use by 684 log trucks and 1,026 contractor vehicles	0.08	0.41, 0.50, 0.68	Road parallels the eastern half and the extreme southwestern portions of the PAC, as there is habitat connected through the PAC to additional areas of unburned and low burn-severity and restricted habitat. We anticipate: - Noise disturbance due to the proximity of the road to this occupied PAC from road construction/maintenance and use; - Increased likelihood of owl-vehicle collisions.
FR 9556E	1.67 miles of spot borrow and drainage structure improvement; road use as described under FR 86	0.04	0.19, 0.60, 0.76	FR 9556E bisects a corridor of unburned and low severity burn habitat which may be used for foraging. We anticipate: Noise disturbance associated with road construction/maintenance and use; Increased likelihood of vehicle-owl collisions.
FR 9556Q	0.65 of a mile of drainage structures; road use as described under FR 86	0.13	0.45	0.35 of a mile of the end of this road is within restricted habitat, with the remainder being located in an area of moderate and high burn severity. We anticipate: - Noise disturbance from road construction/maintenance and use; - Increased likelihood of owl-vehicle collisions.
FR 9561R	1.42 miles of spot borrowing and drainage structures; road use as described under FR 86	0.13	0.44	Road travels through unburned and low burn-severity habitat corridor between the PAC and habitat outside of the PAC, dead-ending at FR 86 in restricted habitat. South of PAC in area contiguous with 2003 detections and that may be used for foraging. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9559U	0.71 of a mile of spot borrowing and drainage improvements; road use as described under FR 86	0.12	0.59	.09 of a mile of the road travels through restricted habitat, and the road lies in close proximity (0.10 of a mile) to a large area unburned and low burn-severity area and restricted habitat. South of PAC in area contiguous with 2003 detections and that may be used for foraging. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9561S	0.27 of a mile of drainage structures; road use as described under FR 86	0.37	0.82	Road travels through unburned area that is mixed in with low burn severity and restricted habitat. South of PAC in area contiguous with 2003 detections that may be used for foraging. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions

FR 9561S1	No construction or maintenance; road use as described under FR 86	0.59	0.95	Road travels through unburned area that is mixed in with low burn severity and restricted habitat. South of PAC in area contiguous with 2003 detections that may be used for foraging. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9561R1	1.06 miles of drainage structures; road use as described under FR 86	0.57	0.89	Road travels through unburned area that is mixed in with low burn severity and restricted habitat. South of PAC in area contiguous with 2003 detections that may be used for foraging. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
Temp. Roads	@T11N, R15E, sec. 22	0.27	0.75	Lies in an area of moderate and high burns-severity; no disturbance anticipated as we believe more suitable habitat in this area is more likely to be used by owls.
PAC 214 – 59.29% moderate and high severity burns.				
FR 300	- 27.65 miles of spot surfacing, spot borrow, drainage structure, turnouts and double lanes, and clearing - 1,440 logging trucks - 2,160 contractor vehicle trips; no turnouts will be constructed for one mile west of the Gentry Lookout Tower on this road	Travels for 0.53 of a mile through southern edge of PAC	Unknown	Best remaining habitat exists in a band through the west side of this PAC and extending southwest to northeast. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions (FR 300 bisects suitable habitat on the western end of the PAC); - Some loss of vegetation for double lane construction and turnouts.
FR 86	15.37 proposed for spot borrow, drainage structure, turnout and double lane construction, and clearing projects; use by 684 log trucks and 1,026 contractor vehicles	0.31 (east end) and 0.42 (west end)	Unknown	FR 86 travels through a large area of unburned and low burn severity area and restricted habitat on the eastern end of the PAC. This area is part of the contiguous habitat that extends through the PAC and may be used for foraging. For this portion of FR 86 only, we anticipate the following: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions

FR 9559U	0.71 of a mile of spot borrow and drainage structures; road use as described under FR 300 above.	0.065 of a mile into PAC before ending	Unknown	Road travels through moderate and high burn severity, except for small pocket of low severity-burn that lies within the PAC boundaries. This pocket of low burn-severity, approximately 0.44 of a mile wide and 0.10 of a mile high, is entirely surrounded by moderate and high burn severity. Due to the extreme conditions of habitat surrounding the pocket of low burn-severity, and the small size of the low burn severity patch, and the availability of more suitable habitat in the immediate vicinity, we do not anticipate owl use of this area.
FR 9561R	1.42 miles of spot borrowing and drainage structures; road use as described under FR 300 above.	0.23	Unknown	With the exception of 0.43 of a mile, this road lies in unburned and low severity burn areas or restricted habitat. The road exists in the large southwest to northeast contiguous habitat we believe to be the best remaining habitat for owls associated with this PAC. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9561R1	1.06 miles of drainage structures; road use as described under FR 300 above.	travels through the upper edge of the PAC for 0.27	Unknown	The road lies entirely within unburned or low severity-burn areas and restricted habitat. The road lies in the large southwest to northeast contiguous habitat we believe to be the best remaining habitat for owls associated with this PAC. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9561S	0.27 of a mile of drainage structures; road use as described under FR 300 above.	0.59	Unknown	This road lies in unburned and low burn-severity areas or restricted habitat. The road exists in the large southwest to northeast contiguous habitat we believe to be the best remaining habitat for owls associated with this PAC. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9561S1	No road construction or maintenance; road use as described under FR 300 above.	0.29	Unknown	This road lies entirely in unburned habitat. The road exists in the large southwest to northeast contiguous habitat we believe to be the best remaining habitat for owls associated with this PAC. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9562P	No road construction or maintenance; road use as described above under FR 300.	0.45	Unknown	The northernmost 0.71 of a mile of this road lies in and low severity burn area. While these are the portions of the road furthest from the PAC boundary, they are in the large southwest to northeast contiguous habitat we believe to be the best remaining habitat for owls associated with this PAC. We anticipate: - Noise disturbance to owls from road construction and use;

				- Increased likelihood of vehicle-owl collisions
Temp. Roads	@T11N, R15E, sec. 34; easternmost road in section	0.13	Unknown	In an area of low burn severity, but wedged between two pockets of moderate and high burn severity. We do not believe owls are likely to use this area.
Temp. Roads	@T11N, R15E, sec. 34; westernmost road in section	0.17	Unknown	In an area of moderate and high burn severity. We do not believe owls are likely to use this area.
Temp. Roads	@T11N, R13E, sec. 25	0.20	Unknown	To be constructed in an area of moderate and high burn severity. We do not believe owls are likely to use this area.
PAC 503 – 96.36% moderate and high burn severity.				
FR 79	1.67 miles of drainage structures; 48 trucks, and unknown number of contractor vehicles	0.019	Unknown	A large contiguous block of unburned and low burn severity area and restricted habitat exists on the eastern boundary of this PAC. Because of the severity of the burn over 96% of the PAC, we would anticipate that owls are more likely to occur in this area, which is located approximately 0.27 of a mile away from the end of FR 79. We do not believe owls will be affected by the use of FR 79.
FR 181	3.0 miles of drainage structures; 208 log trucks, unknown number of contractor vehicles	0.025	Unknown	See comments regarding burn severity of PAC under FR 79 above. With the best remaining habitat to the east of this PAC, FR 181 is approximately 0.31 of a mile away. We do not believe owls will be affected by the use of FR 181.
PAC 504; 92.96% moderate and high burn severity; Single owl detected post-fire in 2003.				
FR 196E	2.75 miles of drainage structures; 160 log trucks and unknown number of contractor vehicles	0.05	0.61	Road is entirely within moderate and high severity burn areas, as were all three owl detection sites in the PAC. Remaining owls are in the canyon areas, and the Recovery Plan notes that the physical structure of canyons can tend to magnify disturbances and limit escape/avoidance routes for owls. However, the road is separated from owl locations by another canyon and ridge area, and we anticipate no noise disturbance from use of this road.
FR 9317	2.53 miles of drainage structures; 256 log trucks, unknown number of contractor vehicles	0.07	0.30, 0.34, 0.36	Road lies within a high severity burn area. Road would be on the upland surface, above the canyon in which the owl was located in 2003. Because the area east of the occupied canyon experienced high and moderate burn severities, while an area of unburned and low severity burn and restricted habitat exists to the west, we do not anticipate owls traveling through this area, so that there is no likelihood of vehicle-owl collisions. As noted above, the physical structure of canyons can tend to magnify disturbances and limit escape/avoidance routes for owls. Because of its proximity to the canyon, we anticipate: - Noise disturbance due to road construction/maintenance and use.

FR 9319	0.77 of a mile of road scheduled for use, with no proposed maintenance or construction; 32 log trucks, unknown number of contractor vehicles	0.07	0.18, 0.26, and 0.65	Road lies within a high severity burn area. Road would be on the upland surface, above the canyon in which the owl was located in 2003. Because the area east of the occupied canyon experienced high and moderate burn severities, while an area of unburned and low burn-severity area and restricted habitat exists to the west, we do not anticipate owls traveling through this area, so that there is no likelihood of vehicle-owl collisions. As noted above, the physical structure of canyons can tend to magnify disturbances and limit escape/avoidance routes for owls. Because of its proximity to the canyon, we anticipate: - Noise disturbance due road construction/maintenance and use.
PAC 509 – 68.9% moderate and high burn severity.				
FR 79	1.67 miles of drainage structures; 48 logging trucks, unknown number of contractor vehicles	0.03	Unknown	Road travels through an area of primarily low severity burn with patches of unburned and moderate burn severity, as well as restricted habitat. A large area of unburned and low burn severity and restricted habitat exists to the east of the PAC, however, additional areas of unburned and low severity burn and restricted habitat are located to the west of the PAC, and FR 79 travels for approximately 0.45 of a mile through restricted habitat. Therefore, we anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 512	2.36 miles of dust control measures; 1,078 log trucks, unknown number of contractor vehicles	0.03	Unknown	Road is in close proximity to PAC boundary, and travels through unburned and low burn severity areas. We anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions
FR 9512L	2.29 miles of drainage structures; 128 logging trucks	0.15	Unknown	Road is in close proximity to PAC boundary, and travels through areas of moderate or high severity. 0.89 of a mile (in two disjunct sections) is within unburned or low burn-severity areas. A large area of unburned and low burn severity and restricted habitat exists to the west of the PAC, and this road runs through those areas in two sections.  Therefore we anticipate: - Noise disturbance to owls from road construction and use; - Increased likelihood of vehicle-owl collisions



PAC 510; 82.33% moderate or high burn severity.				
FR 181	3.0 miles of drainage structures; 208 logging trucks, unknown number of contractor vehicles	0.10	Unknown	Road lies in an area of moderate and high burn severity, in an area with limited potential habitat, and on the rim above the canyon previously occupied by owls. The best remaining habitat exists to the north of this PAC. We anticipate no noise disturbance to the owls from the use of this road.
FR 521	0.8 of a mile of spot borrow and drainage structures; 544 logging trucks, unknown number of contractor vehicles	0.03	Unknown	Road travels through 2.3 miles of unburned or low burn severity areas to the North of the PAC, and is within close proximity of canyon habitat previously occupied by owls. We anticipate that owls associated with this PAC would likely forage in this best remaining habitat to the north. Therefore we anticipate: - noise disturbance from road construction/maintenance and use - likelihood of owl-vehicle collisions
FR 521A	0.2 of a mile of drainage structures; 128 logging trucks; unknown number of contractor vehicles	0.03	Unknown	Road travels through 0.58 of a mile of unburned or low burn-severity areas to the North of the PAC, and is within close proximity of canyon habitat previously occupied by owls. As noted above, canyons can concentrate noise disturbance. We anticipate that owls associated with this PAC would likely forage in this best remaining habitat to the north. Therefore we anticipate: - noise disturbance from road construction/maintenance and use - likelihood of owl-vehicle collisions
FR 521B	0.1 of a mile of drainage structures; 192 logging trucks; unknown number of contractor vehicles	0.12	Unknown	Road travels through 0.35 of a mile of low burn severity and restricted habitat, and is within close proximity of canyon habitat previously occupied by owls. Please see comments above about noise disturbance and canyons. We anticipate: - noise disturbance from road construction/maintenance and use - likelihood of owl-vehicle collisions
FR 521C	Same as described for FR 521B; the 0.1 of a mile applies to both of these roads, as do the number of logging trucks	0.50	Unknown	Road travels through 0.70 of a mile of low burn severity, and is within close proximity of canyon habitat previously occupied by owls. Please see comments above on noise disturbance and canyons. We anticipate that owls associated with this PAC would likely forage in this best remaining habitat to the north. Therefore we anticipate: - noise disturbance from road construction/maintenance and use - likelihood of owl-vehicle collisions

FR 625	1.86 miles used by 32 trucks, with no construction or maintenance; unknown number of contractor vehicles	0.05	Unknown	Road travels through unburned and low burn severity areas, as well as restricted habitat in area with best remaining habitat, in close proximity to the PAC. We anticipate that owls associated with this PAC would likely forage in this best remaining habitat to the north. Therefore we anticipate: - noise disturbance from road construction/maintenance and use - likelihood of owl-vehicle collisions
FR 9512W	1.05 miles of drainage structures; 208 logging trucks; unknown number of contractor vehicles	0.02	Unknown	Road lies almost entirely within moderate and high burn severity areas, and is south of the PAC, away from the best remaining habitat in the area. We do not anticipate effects from the use of this road.
FR 9512Y	0.69 of a mile of spot borrow and drainage structures; 256 logging trucks; unknown number of contractor vehicles	0.09	Unknown	Road lies almost entirely within moderate and high burn severity areas, and is south of the PAC, away from the best remaining habitat in the area. We do not anticipate effects from the use of this road.
FR 9513K	1.66 miles of drainage structures; 224 logging trucks; unknown number of contractor vehicles	0.55	Unknown	Road lies almost entirely within unburned and low burn severity areas to the south and west of the PAC. Although the best remaining suitable habitat is located to the north, this block of unburned and low burn severity is contiguous with that block. Therefore, we anticipate: - noise disturbance from road construction/maintenance and use; - likelihood of owl-vehicle collisions.
FR 9513Q	0.54 of a mile of road to be used by 32 logging trucks; no construction or maintenance; unknown number of contractor vehicles	0.05	Unknown	Road lies almost entirely within unburned and low burn-severity areas to the south and west of the PAC. Although the best remaining suitable habitat is located to the north, this block of unburned and low burn severity is contiguous with that block. Therefore, we anticipate: - noise disturbance from road construction/maintenance and use; - likelihood of owl-vehicle collisions.

<sup>1</sup>The number of trucks referenced within each road description indicate the number of trucks as stated in Appendix C of the BAE. The number of trucks may, in some cases, indicate the number of trucks for roads within that complex. However, no information was provided with which to assess the specific number of trucks on each road within a given complex.

<sup>2</sup>Numbers of trucks and contractor vehicles listed under “Activity” subheading indicates the number of vehicles using roads in the vicinity of that PAC over the lifetime of activity in that area.

<sup>3</sup>Measurements generated using ArcGIS 8.2 and layers provided by the Forest Service. Measurements generally indicate miles at closest point between PAC boundary and road, or owl location and road, and are approximate.

Salvage Logging

As noted under the Description of the Proposed Action, this activity would salvage harvest dead standing trees with merchantable value on approximately 34,156 acres of burned areas classified

as either moderate to high burn severity. Salvage logging activities include logging dead standing trees that are 12-inches dbh or larger. Ground-based logging systems will be used. These systems include the use of tractors, skidders, and other mechanical equipment. While only dead trees will be felled, they may be removed through areas with live vegetation, so that skid trails may result in areas which currently support live vegetation. With respect to MSOs, the BAE notes the following:

- No salvage harvest is proposed within 0.25 of a mile of an unburned nest area.
- There are 17 acres of proposed treatments within 0.25 of a mile of a burned historical nest in PAC 510.

Maps in Appendix D of the BAE identify the location of salvage treatments, and are incorporated herein by reference. However, the BAE notes that specific harvest unit boundaries may be adjusted during the sale layout following field review of burn severity conditions on the ground. Conservation/Mitigation measures are detailed above under the Description of the Proposed Action. The location of salvage treatments relative to owl locations and PACs is broken out below by PAC.

As noted above for road use, we evaluated the proposed action in relation to PACs. However, because of habitat destroyed by the fire, and the uncertainty surrounding the exact locations of owls previously using these PACs, we have also considered areas of better quality habitat in close proximity to either PACs or owls detected within the proposed action area following the fire in 2003. Because the Recovery Plan indicates that the median size of an area enclosing 75 percent of the foraging locations was 595 acres, and therefore only 75% of the foraging occurs within this area, it is reasonable to expect that foraging will take place outside of the 600 acre boundary.

### **PAC 201**

PAC 201 would be surrounded by salvage logging units that end at the border of the PAC on all but its southwestern border, with the exception of three small breaks which would not be harvested because they fall in areas that burned at low intensities. At its nearest point, salvage logging would be located within 0.27 of a mile of an owl detection site from 2003. These areas that would not be treated would serve as the only remaining corridors out of the PAC to unburned and low burn-severity areas that may be used by the owls for foraging. The three corridors are approximately 0.07, 0.10, and 0.15 of a mile in width.

As noted previously, approximately 51% of PAC 201 was moderately or severely burned. A single male owl was located in this PAC in 2003. This PAC had supported a pair of owls as recently as 2002. The southeastern and northwestern edges of the PAC experienced high and moderate severity burns. It is anticipated that, should the owls from this PAC require additional areas for foraging, they would most likely travel to the northeast or southwest, where areas of low or unburned areas exist. The areas to the southwest are outside of the proposed action area. The areas to the northeast would have two remaining corridors that were not logged through which the owls could pass. Within this northeast area, pre-fire habitat did not generally meet the definition of restricted habitat, with the exception of one small patch of approximately 2.87 acres, which would not be logged. An additional area of restricted habitat to the southwest

would also not be logged, because it is classified as low burn-severity. However, this area is separated from the PAC by a wide stretch of severely burned habitat.

Because harvesting activities would occur within 0.27 of a mile of a known owl site, and would occur up to the PAC borders, we anticipate that salvage logging will result in noise disturbance that would adversely affect owls within this PAC.

### **PAC 202**

Salvage logging would occur to the west of the PAC, and would be within 0.08 of a mile of the PAC boundary at its nearest point. The remainder of the salvage logging near the PAC would be to the west at distances varying from zero to 0.60 of a mile. An additional area of salvage logging would occur north of the PAC, at approximately 0.30 of a mile at its nearest point. (While cutting units are closer to, or adjoining the PAC boundaries, areas closest to the PAC that experienced a low burn severity would not be harvested).

Approximately 68 percent of this PAC was moderately or severely burned. The nearest salvage logging, which would occur to the west, is within 0.35 of a mile of a known owl detection in 2003. Large areas of unburned or low burn severity occur to the west and east of this PAC. Much of these areas has been identified post-burn as restricted habitat. Additional habitat may be available for foraging due south of the PAC, which is outside of the proposed action area. Because of the availability of restricted habitat in areas adjacent to the PAC that would not be harvested, and because the harvest treatments would not approach within 0.25 of a mile of the known owl sites from 2003, we believe that the proposed salvage harvest action will not adversely affect owls at the detection sites within this PAC. However, cutting would occur immediately adjacent to unburned and low burn-severity areas and restricted habitat, and owls foraging in these areas could be disturbed by the noise associated with timber harvesting activities.

### **PAC 203**

No salvage logging would occur in areas immediately surrounding this PAC. The nearest salvage logging activities would occur greater than 0.75 of a mile from PAC boundaries, and 1.32 miles from a 2003 owl detection site. The areas that are adjacent to the PAC and that might be used for foraging are approximately 0.22 of a mile from the nearest salvage logging unit, and separated by areas of high and moderate burn severity.

### **PAC 204**

No salvage logging would occur in areas immediately surrounding this PAC. This PAC was approximately 96 percent moderately or severely burned. Should owls be present, it is likely they would be foraging to the south, off of the proposed action area, as all habitat to the west, north, and east experienced moderate to high burn severity. We do not anticipate any effects from salvage logging on this PAC.

**PAC 205**

No salvage logging would occur in areas immediately surrounding this PAC. This PAC experienced moderate to high burn severity over 62 percent of its acreage. The nearest salvage logging would occur approximately 0.7 of a mile to the north, and approximately 1.8 miles from the owl detection site for this PAC from 2003. However, any owls foraging away from the PAC could be affected by salvage logging operations immediately adjacent to unburned and low burn-severity areas, as well as small areas of restricted habitat. A relatively large block of restricted habitat exists between the PAC boundary and the salvage logging sites, and is approximately 0.30 of a mile from the nearest salvage logging boundary. It is possible that some noise disturbance may occur to foraging owls if they are foraging north of the PAC, nearer to the salvage logging units, as these areas represent the best remaining habitat.

**PAC 206**

The nearest salvage logging is approximately 0.47 of a mile to the north. Approximately 50 percent of this PAC experienced moderate to high severity burns. Pockets of unburned and low burn-severity areas exist through the PAC on its west side and extend out to the PAC's north. While some blocks of low burn severity do exist near proposed salvage logging operations, they are isolated from the PAC by larger areas of moderate and high burn severity. We do not anticipate any effects from salvage logging on this PAC.

**PAC 207**

Salvage logging is planned immediately adjacent to this PAC on its west, north, and east sides. This PAC experienced moderate and high severity burns over 37 percent of its acreage. Unburned and low severity burn areas to the north-northeast and south-southwest of the PAC are immediately adjacent to additional salvage logging units, so that an owl foraging outside of PAC boundaries in this area could potentially be disturbed by noise associated with salvage logging operations. We therefore anticipate noise disturbance to any owls present in this PAC.

**PAC 208**

The nearest salvage logging units to this PAC are approximately 0.27 of a mile to the north. A male owl was detected in this PAC in 2003. The eastern portions of this PAC were the most severely burned, while the western half, and areas surrounding it, experienced low and moderate burn severities. The salvage logging unit would occur immediately adjacent to these areas and noise disturbance to owls foraging outside of PAC boundaries could occur. Restricted habitat has been designated post-fire and occurs immediately adjacent to the proposed salvage logging unit as well. We therefore anticipate noise disturbance to this PAC.

**PAC 209**

The southeastern end of this PAC is immediately adjacent to salvage logging units. At their nearest point, salvage logging units are 0.17 of a mile from an owl site from 2003. Cutting units to the south of the PAC border unburned and low burn severity areas, as well as restricted

habitat. Owls foraging south of this PAC may be disturbed by noise associated with salvage logging activities.

### **PAC 210**

Salvage logging would occur immediately adjacent to portions of the southern boundary of this PAC. At its nearest point, salvage logging would occur within 0.21 of a mile of an owl site from 2003. This PAC supported a pair which laid three eggs in 2003 after the fire. Approximately 31 percent of this PAC experienced moderate or high burn severities. Salvage logging would occur immediately adjacent to unburned and low severity burn areas, as well as restricted habitat, to the south of this PAC. However, similar habitat occurs to the north of the PAC. We therefore anticipate that salvage logging would create noise disturbance for owls in this PAC.

### **PAC 214**

Salvage logging units adjoin portions of the western, northern, and eastern boundaries of this PAC. PAC 214 experienced moderate to high severity burns over 59 percent of its acreage. A large unburned and low burn-severity area is located within and adjacent to the PAC. Patches of restricted habitat exist within this area as well. Salvage logging units are immediately adjacent to these areas. Due to past occupancy status and the proximity of salvage logging units to unburned and low burn-severity areas and restricted habitat, we anticipate that salvage logging would disturb foraging owls from this PAC.

### **PAC 502**

No salvage logging units are planned within 1.0 mile of the boundary of this PAC, so no effects are anticipated.

### **PAC 503**

Salvage logging will occur along the west and north boundaries of this PAC. PAC 503 experienced moderate and high severity burns over approximately 96 percent of its acreage. For owls associated with this PAC, the best remaining habitat occurs to the east of the PAC. These areas experienced only low severity burns or were unburned. Restricted habitat still exists in these areas as well. These areas are approximately 0.30 of a mile or greater from proposed salvage logging units.

Additional unburned or low burn-severity areas exist well west of the PAC, but are separated from the PAC boundaries by a large block of moderate and high burn severity. Without further survey or monitoring it is not possible to know if owls associated with this PAC have moved to either the east or west into the unburned and low burn-severity areas. We therefore believe there is a likelihood that salvage logging would cause noise disturbance for any owls associated with the habitat west of this PAC.

**PAC 504**

Salvage logging would occur along the northern and eastern boundaries of this PAC. Salvage logging unit boundaries are within 0.056, 0.11, and 0.12 of a mile of known owl sites from 2003. Salvage logging units appear to overlap into the PAC for approximately 0.05 of a mile at one location. Due to the proximity of salvage logging operations to the PAC boundary and known owl sites from 2003, we conclude that salvage logging will result in noise disturbance of owls in this PAC.

**PAC 508**

No salvage logging will occur within close proximity of this PAC, so no effects are expected.

**PAC 509**

Salvage logging units occur within 0.01 of a mile of the northern tip of this PAC; however, the majority are approximately 0.05 of a mile or more away. Approximately 69 percent of this PAC experienced moderate or high severity burns. Unburned and low burn-severity areas are present on the west, east, and north sides of this PAC, and restricted habitat overlaps some of these areas as well. Restricted habitat to the north would be immediately adjacent to proposed salvage logging activities. Should owls associated with this PAC be using these areas for foraging, there is a likelihood that noise disturbance from salvage logging activities to owls associated with this PAC.

**PAC 510**

Salvage logging units exist immediately adjacent to the southern and northern boundaries of this PAC. This PAC experienced moderate and high severity burns over approximately 82 percent of its acreage. Unburned and low burn-severity areas are located to the northwest and southeast of the PAC boundaries. Salvage logging will take place immediately adjacent to these areas. For owls associated with this PAC or using the surrounding unburned or low severity burned areas, the likelihood exists for noise disturbance from salvage logging activities.

**PACs 511, 512, and 513**

No salvage logging is planned in proximity to these PACs, so no effects are expected.

**Fuelwood Harvest**

Fuelwood harvest, specialty wood products, and other small sales would involve the removal of wood on 6,903 acres of land. All of the fuelwood-harvest projects are located in the eastern half of the burn area, away from PACs. With the exception of three units, they do not encompass any restricted habitat. Approximately six acres of restricted habitat are included within fuelwood-harvest units.

Approximately 31.7 acres of unburned areas are included within fuelwood-harvest boundaries, as are 884 acres that experienced a low severity burn. Although the Forest Service committed to

restricting salvage logging to areas of moderate and high burn severity, this will not apply to fuelwood areas.

Fuelwood harvest activities are 8.0 or more miles from the nearest PAC boundary. A road network serves this area, so that trucks hauling fuelwood or small-sale timber products would not need to go through areas with MSO PACs. Some additional roads will be constructed to reach these areas, however, these roads will also be outside of MSO PACs. For these reasons, we anticipate that this portion of the proposed action is not likely to adversely affect MSO PACs.

#### 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.

We are not aware of any specific future State or Tribal actions. We anticipate that future local and private actions include rebuilding of structures damaged or lost during the Rodeo-Chediski fire in the communities of Forest Lakes, Pinedale, Linden, and Heber-Overgaard. Ongoing private actions in the area are numerous, including development, recreation, and other activities associated with residential developments.

#### CONCLUSION

After reviewing the current status of MSOs, the environmental baseline for the action area, the effects of the proposed salvage logging and road use, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the MSO.

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 regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined in 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 in 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 Service so that they become binding conditions of any grant or permit issued to the contractors, the general public, or others applying for tree removal permits, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to assume and implement the terms and conditions or (2) fails to require the contractors, general public, or individuals receiving tree removal permits 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 Service must report the progress of the action and its impact on the species to the this office as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

#### AMOUNT OR EXTENT OF TAKE

Because of the nature of the disturbance in this area due to the fire, and the resulting multiple management actions that have taken or will take place, it is important to assess the overall effects that will result from this and past actions. The take assessed for the BIA use of roads in this area for salvage logging and the take assessed for the BAER activities are summarized in Table 8.

Table 8. Take previously assessed for PACs in the Rodeo-Chediski burn area.		
PAC #	BIA Opinion (2-23-03-F-07) November 2002 – June 2003	BAER Opinion (02-21-02-F-0225) July 2002 – September 2004
201	Harassment	Harm and harassment
202	Harassment	Harm and harassment
203	Harassment	Harm and harassment
204	Harassment	Harm and harassment
205	Harassment	Harm and harassment
206	Harassment	Harm and harassment
207	Harassment	Harm and harassment
208		Harm and harassment
209		Harm and harassment

210		Harm and harassment
214	Harassment	Harm and harassment
502		Harm and harassment
503		Harm and harassment
504		Harm and harassment
508		Harm and harassment
509		Harm and harassment
510		Harm and harassment
511		Harm and harassment
512		Harm and harassment
513		Harm and harassment

The anticipated take statement in this opinion does not assess the short-term take associated with the proposed action, as this would result in a simple triple-counting of the effects of take to these PACs without considering the cumulative nature of those effects. We are instead assessing the continuing harm and harassment to these birds over the course of the last three actions taken in this area in response to the Rodeo-Chediski fire. The take statement in this opinion is readjusting the take already anticipated for these PACs from short-term habitat disturbance and alteration to longer-term habitat disturbance and alteration.

We anticipate that this proposed action, when coupled with the previous actions described in Table 8, will effectively render the area unsuitable for nesting MSO through noise disturbance to foraging, roosting, and nesting owls for several years. We recognize that birds will continue to reside for the near-term in these areas, and that there may be elevated prey levels in response to habitat alteration associated with the fire in the near-term; however, we believe the long-term survival and habitat capability of this area is, and will continue to be, adversely affected by this action. Based on the information available at this time, the below take statement represents our best approximation of effects.

1. Harassment through noise disturbance resulting from road /maintenance on existing roads, road use of existing roads, and/or salvage logging operations in and around PACs 201, 202, 203, 205, 206, 207, 208, 209, 210, 214, 503, 504, 509, and 510. The take associated with this proposed action, when combined with the effects of take described in Table 8 above, will be long-term (i.e., lasting approximately six years). Disturbance from those impacts will result in disrupted MSO reproduction and the ability of these PACs to provide for essential elements of survival for resident MSOs.
2. Harassment through the reduction of MSO roosting and foraging habitat in close proximity to PACs 202, 203, 205, 207, and 214 due to habitat loss and short-term disturbance for temporary new road construction, use, and rehabilitation. The take

associated with this proposed action, when combined with the effects of take described in Table 8 above, will be long-term in nature. Disturbance from those impacts will result in disrupted MSO reproduction and the reduced ability of these PACs to provide for essential elements of survival for resident MSOs.

3. Harm, through death or injury, due to vehicle-owl collisions. We anticipate that the potential for this form of take occurs around PACs 201, 202, 203, 205, 206, 207, 208, 209, 210, 214, 509, and 510. However, we recognize that vehicle-owl collisions are rare, and may not occur at each of these PACs. We anticipate that the potential for vehicle-owl collisions is highest along FR 86, FR 300, and FR 512. We therefore anticipate take of one owl each year for three years in association with one of these roads, for a total take of three owls due to vehicle-owl collisions.

As stated above, because of the extent and severity of the burn in some PACs, it is reasonable to conclude that owls have adjusted their foraging, roosting, and nesting areas to include areas that were either unburned, experienced low burn severity, or that support remaining restricted habitat. We have therefore considered areas outside of the PACs in analyzing the effects of the action on owls within the proposed action area.

Noise disturbance studies have shown, as detailed above, that owls have sensitive hearing, respond to noise, and can be disturbed by noise. We anticipate that the noise generated by logging trucks, tree cutting and hauling, and road repair, construction, and maintenance activities, which will occur within close proximity to either PAC boundaries, habitat likely used by the owls, or known owl sites from 2003, will disturb owls remaining within the proposed action area, as detailed above.

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

#### EFFECT OF THE TAKE

For PACS 201, 202, 203, 205, 206, 207, 208, 209, 210, 214, 503, 504, 509, and 510, we anticipate that the noise disturbance caused by road construction and use of existing roads, salvage logging, and construction of new temporary roads, their use, and rehabilitation will result cumulatively in take of owls associated with each of these PACs. We do not believe it is necessary to provide a take statement for each of the actions (i.e., road construction, salvage logging) affecting these PACs, as the work would be occurring simultaneously near the PACs, so that the effects overlap.

For PACs 201, 202, 203, 205, 206, 207, 210, 214, 503, 504, 509, and 510, we anticipate long-term effects, which could essentially eliminate reproduction for a six-year period. Given that the anticipated reproductive potential of a given owl pair is approximately eight to 10 years, adverse effects for a six-year period to 12 PACs in this area is substantial.

In the accompanying biological opinion, the FWS determined that this level of anticipated take is not likely to result in jeopardy to the species. We present these conclusions for the following reasons:

- The effects of the fire form, in part, the environmental baseline against which the management action is proposed. Because of fuel loading and drought conditions in this area, the fire did not behave like or result in conditions similar to a natural fire, and the resulting effects on the MSO are therefore likely variable. In some areas, owls may have been killed, and in other areas they may have left, either temporarily or permanently. Owls are known to return to their PACs following fires (Bond *et al.* 2002) as they did in at least 11 out of 20 PACs after this fire.
- The 20 PACs within the proposed action area represent 3.2% of the 618 PACs identified in the Upper Gila Mountains RU and 2.0% of the 980 PACs located in the southwest region. This is a relatively small percentage of the total number of remaining PACs.

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

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

The following reasonable and prudent measures and terms and conditions are necessary and appropriate to minimize take of MSOs:

1. Minimize disturbance to owls and habitat loss associated with the action.
  - a. Complete monitoring of owls within the proposed action area in 2004. Evaluate the information gained through the 2004 survey effort to determine if additional mitigation measures might be used to minimize impacts to the species for the remaining life of the proposed action.
  - b. Limit the number of newly constructed road turnouts. This should be done by:
    - i. using all turnouts previously constructed by the BIA for their use of these roads for salvage logging;
    - ii. using radios to coordinate truck traffic;
    - iii. limiting construction of new turnouts unless line of sight is obstructed, or topography (i.e., hills) creates hazardous situations for trucks passing on the road.

- c. Ensure that any road turnouts or double lane construction projects that fall within restricted or protected habitat adhere to the recommendations in the Recovery Plan with respect to tree removal, or place them outside of restricted and protected habitat.
2. Minimize unnecessary disturbance to habitat within the proposed action area.
  - a. Direct skid trails through salvaged areas to prevent disturbance in unsalvaged areas, especially in unburned or low burn severity areas.
  - b. Take advantage of existing openings, rather than removing additional trees, for log deck construction and use.
  - c. Place all log decks in areas of high or moderate burn severities.
3. Minimize habitat losses in unburned or low burn-severity areas.
  - a. Eliminate fuelwood harvesting from the approximately 31.7 acres of unburned area and the approximately 884 acres of low burn-severity area that currently fall within fuelwood harvest boundaries (as identified in GIS layers).
  - b. Ensure that permits issued to fuelwood harvesters clearly state where the boundaries of available fuelwood are located.
4. Minimize disturbance to owls outside of existing PACs.
  - a. For those owls detected in 2003 north and east of PAC 510, complete additional survey or monitoring to determine the status of these two male owls. Should either owl appear to be a resident, appropriate PAC boundaries will need to be established.
  - b. Until such time as the status of the owls described above in 4.a. can be assessed, preclude salvage logging in this area. Salvage logging should be precluded in any area within proximity of the owl detections that would constitute the best suitable habitat for inclusion within a PAC in order to avoid a loss of resources necessary for the survival and recovery of these owls.
5. Ensure adherence to the proposed action, monitor results, and report to the FWS.
  - a. Provide the FWS with annual reports, beginning one year from the start-up of salvage operations, and continuing throughout the life of the action, indicating any new information about the owls determined through monitoring or survey work.
  - b. Within the same report under item 5.a, detail changes in salvage unit boundaries, violations of speed limits, or any other deviations from the proposed action.

- c. Provide the FWS, within the report described under item 5.a, an assessment of take that has occurred to date. Provide for regular inspections by Forest Service law enforcement personnel to ensure that speed limits are adhered to by logging truck drivers.

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

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

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

### **CONSERVATION RECOMMENDATIONS**

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

1. We recommend that, as part of the monitoring effort for owls noted in item 1 above, the Forest Service use location points to determine what areas the owls are using for foraging, roosting, and nesting, so that appropriate adjustments can be made to existing PAC boundaries.
2. We recommend that the Forest Service complete surveys to protocol for Chiricahua leopard frogs in all remaining suitable habitat within the proposed action area.
3. We recommend that additional rehabilitation efforts for the Rodeo-Chediski fire be considered.

4. Prior to leaving slash on the ground, determine the amount of slash necessary for prevention of erosion. Remove additional slash so that it does not increase the fuel loading in the area, and lead to increased fire risks.

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

### REINITIATION NOTICE

This concludes formal consultation on the actions outlined in your request for formal consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate the Forest Service's efforts to identify and minimize effects to listed species from this project. We especially appreciate the MSO monitoring efforts of your staff during 2003, your inclusion of FWS and Arizona Game and Fish Department personnel on the Inter-Disciplinary Team for the Rodeo-Chediski salvage logging, the availability of your staff for field trips, and your sharing of GIS data. For further information please contact Mary Richardson (x242) or Debra Bills (x239). Please refer to the consultation number, 02-21-03-F-0064, in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)  
Field Supervisor, Fish and Wildlife Service, Albuquerque, NM  
District Ranger, Alpine Ranger District, Alpine, AZ  
Rare Species Coordinator, Apache-Sitgreaves National Forest, Springerville, AZ  
District Ranger, Springerville Ranger District, Springerville, AZ

Acting Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Sam Hitt, Wild Watersheds, Santa Fe, NM

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APPENDIX A - Concurrences

## BALD EAGLE

As noted within the BAE, mid-winter surveys for bald eagles have been conducted from January 1992 through January 2002. Breeding bald eagles live year-round in Arizona, while wintering bald eagles arrive in November, with numbers peaking in January and February (Todd 1978), and with birds migrating north in April. Only wintering bald eagles are known to occur within the proposed action area. Wintering birds are typically centered around major river drainages or lakes. Birds are widely scattered and normally seen as solitary individuals or in small groups (Grubb and Kennedy 1982). Within the proposed action area, eagles winter in low densities around lakes above the Mogollon Rim and near the Canyon Creek Fish Hatchery. Birds sighted in other areas are usually feeding on carrion. Year-round habitat exists for bald eagles within and adjacent to the burn area.

Work would be completed over a three to ten-year period, including during winter months. With respect to indirect effects through habitat modification, it should be noted that the burned area encompasses more than 642,000 acres, which burned in a mosaic pattern. Within that burned area, suitable habitat for bald eagles remains. Known concentration areas of bald eagles include O.W. Ranch, the Canyon Creek Fish Hatchery, and Black Canyon Lake. Up to seven bald eagles may use a given concentration area at one time (H. Provencio, USFS, pers. comm. 2003). Small numbers of eagles are scattered across the analysis area in association with carrion. The only documented roost sites within the analysis area are the roost sites associated within the Canyon Creek fish hatchery. No work will be done near O.W. Ranch or the Canyon Creek Fish Hatchery. Salvage logging operations would be approximately 0.75 and 0.25 of a mile from O.W. Ranch and Canyon Creek Fish Hatchery respectively. Salvage logging near Black Canyon lake would not be within 0.25 of a mile of the lake, per the BAE.

Salvage logging will result in tree removal in areas with moderate or high burn severities. Because of the mosaic of burn intensities, many areas will be left with trees standing, so that eagles have remaining perches for foraging and roosting within the proposed action area. Salvage logging would be greater than 0.25 of a mile from all three known concentration sites. No road use would occur within 0.25 of a mile of any of the three concentration areas. No new roads will be built within 0.25 of a mile of any of the concentration areas. There are many remaining trees throughout the burned areas, including at the concentration areas at Black Canyon Lake, which can be used by bald eagles. Because: 1) bald eagles forage over the entire forested area; 2) eagles are not likely to be foraging in areas of completely dead trees; 3) snags will be left within all salvage harvest units; and 4) eagles are not breeding in this area, and are therefore not tied to a nest site, we anticipate that the overall effects of this action on bald eagles would be insignificant. For these reasons, we concur that the action as proposed may affect but is not likely to adversely affect bald eagles.

## COLORADO PIKEMINNOW

Populations of Colorado pikeminnow closest to the proposed action are those introduced in the 1980s into the Salt River above Roosevelt Dam, in Cherry Creek, and in Canyon Creek. These populations were reintroduced as experimental, non-essential populations. Critical habitat for the pikeminnow has not been designated in Arizona. As noted in the BAE, the most recent

pikeminnow documented in this area was from surveys in the late 1980s on the Tonto National Forest. Within the proposed action area, habitat for pikeminnow remains within the upper reaches of Canyon Creek on the Tonto National Forest.

Salvage logging within the Canyon Creek and Carrizo Creek watershed will occur on 2,520 and 322 acres, respectively, per the BAE. The BAE details conservation measures to be taken as part of this action, as contained in Appendix A of the BAE and described under Description of the Proposed Action above. In addition, the BAE notes that the proposed action would include retention of logging slash on the ground to retard soil erosion. No salvage logging would occur along the face of the Mogollon rim, on slopes greater than 40 percent, or anywhere on the Tonto National Forest.

Due to the experimental, non-essential designation of pikeminnow populations in this area, the stream protective measures outlined in Appendix A, and the fact that pikeminnow are extremely unlikely to occur in this area, we concur with the Forest Service's determination that the proposed action is not likely to jeopardize the species.

#### CHIRICAHUA LEOPARD FROG

Chiricahua leopard frog surveys on the Tonto and Apache-Sitgreaves National Forests are incomplete. The most recent surveys completed there occurred in 1992 and 1993, and located two sites supporting Chiricahua leopard frogs. Neither of these sites is within the proposed action area. The nearest known frogs occur in the Gentry Creek Conservation and Management Zone established for Chiricahua leopard frogs, and are located 1.0 mile southwest and 1.5 miles west at Frog Pond and Ramer Tank, respectively, and 6.0 and 9.0 miles from the nearest treatment areas, according to the BAE. Chiricahua leopard frogs are also known to occur in Crouch Creek in this general area (J. Rorabaugh, USFWS, pers. comm. 2002).

The BAE notes that both Canyon Creek and Mule Creek are perennial streams on the Tonto National Forest and have the potential to support Chiricahua leopard frogs. The BAE further notes that there are numerous stock tanks which could provide potential habitat on both the Tonto and Sitgreaves national forests. The Forest Service concluded that "If presence is in doubt and surveys have not been conducted, assume presence for habitat that would likely support Chiricahua leopard frogs." Habitat within the proposed action area that could potentially support leopard frogs is identified in Appendix F. These areas include all perennial waters and stock tanks within the proposed action area.

As described above, only areas within a moderate or high burn severity will be treated. Logging slash will be left in place as needed to provide ground cover to prevent or protect against soil erosion.

All perennial stock tanks and creeks would be buffered by 100 feet, as identified in Appendix F. Approximately 49 miles of roads would be treated for dust abatement. Roads in close proximity to waters which might support frog habitat are identified in Appendix F, and no magnesium chloride or lignin would be applied to roads or 200 feet out from those roads in both directions

where there are identified potential habitat sites. All salvage harvest treatments and related road work will follow guidance outlined in the Best Management Practices.

In conclusion, the BAE notes that: 1) the use of mechanized equipment will not alter any Chiricahua leopard frog habitat or disturb any of the perennial waters within the analysis area; 2) all identified perennial waters would have a 100-foot “no treatment” buffer on either side of them; 3) no magnesium chloride or lignin will be applied on roads in areas of concern for the frog, where waters supporting the frogs exist; and 4) Best Management Practices, as outlined in Appendix A, will be followed. We believe that the surveys completed to date are inadequate in that they have not focused specifically on the Chiricahua leopard frog, and have not been completed to the standardized protocol for this species. Additionally, suitability of all habitat has not been assessed. However, because of the protective measures that have been put in place for all potentially suitable Chiricahua leopard frog habitat, we concur with the Forest Service’s determination of may affect, not likely to adversely affect, for Chiricahua leopard frog.

APPENDIX B – Maps

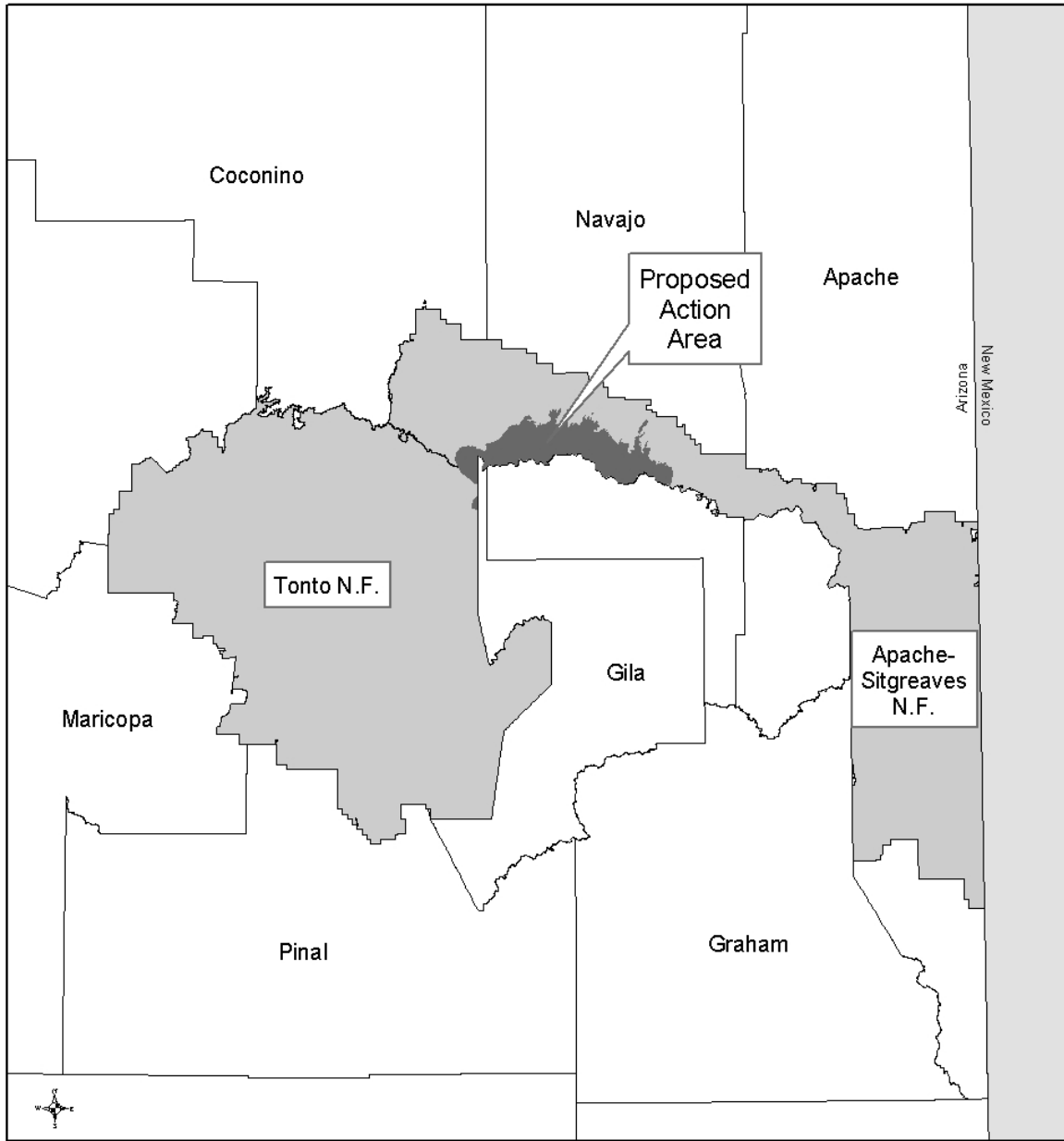



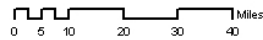


Figure 1. Map of the Proposed Action Area. For purposes of this consultation, the proposed action area is the same area as the Rodeo-Chediski fire.

-  Counties
-  National Forests
-  Proposed Action Area



USFWS/AESO/mer 1/2004



## APPENDIX C – TABLES

Table 2. MSO PAC and occupancy status in 2003.	
PAC	Occupancy Status
201	Male inferred or confirmed
202	Single Owl - non-nesting confirmed
203	Single owl - nesting undetermined
204	Formal Monitoring - No response
205	Male inferred or confirmed
206	Formal Monitoring - No response
207	Formal Monitoring - No response
208	Male inferred or confirmed
209	Single Owl inferred or confirmed - 1 young dead
210	Single owl inferred or confirmed - 3 eggs
214	Formal Monitoring - No response
502	Formal Monitoring - No response
503	Formal Monitoring - No response
504	Single owl - nesting undetermined
508	Formal Monitoring - No response
509	Formal Monitoring - No response
510	Formal Monitoring - No response
511	Single owl inferred or confirmed
512	Single owl inferred or confirmed
513	Single owl inferred or confirmed

Table 3. Acres and percentages of areas within PACs that were moderately or severely burned, based on 8/24/02 satellite imagery, as provided in the BAE.				
PAC #	Moderately Burned Acres	Severely Burned Acres	Percent Moderate or Severe Burn	Nest Tree Burned
201	158.6	148.4	50.87	Undetermined
202	168.3	240.2	67.65	Yes
203	199.9	198.5	66.09	Yes
204	161.4	429.1	96.47	Yes
205	214.3	155.9	61.54	Undetermined
206	164.4	139.6	50.71	Yes
207	83	143.7	37.34	Undetermined
208	116.5	212.8	54.24	Yes
209	138.4	152.3	46.83	Yes
210	39.4	146.2	31.00	Yes
214	114.9	243.7	59.29	Undetermined
502	243.2	98.6	56.88	Yes
503	49.1	387.1	96.36	Yes
504	66.6	417.9	92.96	Yes
508	114.7	19.3	20.15	Undetermined
509	129.3	291.8	68.9	Yes
510	151	303.9	82.33	Yes
511	142.7	113.7	43.76	Undetermined
512	45.8	0	6.86	Undetermined
513	105.2	0	16.45	Undetermined

Table 4. Actions completed as part of the Rodeo-Chediski fire suppression in June and July, 2003, within the proposed action area.				
PAC	Bulldozer Line	Aerial Ignition	Aerial Retardant	Burnout Oper.
	≈Length	≈ Amount	≈ Amount	≈ Amount
201				X
				1/3 of PAC
208				X
				½ of PAC
210				X
				1/4 of PAC
502	X			
	Adjacent to PAC for 1.0 mile			
503			X	X
			Small fraction	3/4 of PAC
504		X	X	X
		1/4 of PAC	1/8 of PAC	½ of PAC
508	X			X
	0.09 of a mile			3/4 of PAC
509				X
				100% of PAC
510		X	X	X
		1/3 of PAC	7/8 of PAC	100% of PAC
511	X			X
	1.9 miles			3/4 of PAC
512				X
				1/3of PAC
513				X
				3/4 of PAC

Table 5. Fire history in the Rodeo-Chediski burn area (B. Dykstra, Forest Service, pers. comm. 2003).		
Fire	Date	Acreage Consumed
Day Fire	1974	3,618
Elk Fire	1987	800
Bruno Fire	1989	328
Black Fire	1995	199

Table 7. Expected number of logging trucks passing within 0.5 of a mile of MSO PACs.				
PAC #	Volume MMBF	Total # of Log Trucks	Estimated # of Contractor Vehicles	Six Week Daily Traffic Average
201	3.6	1,440	2,160	52
202	2.6	1,040	1,560	37
204	2.3	920	1,380	33
205	2.3	920	1,380	33
207	2.3	920	1,380	33
209	1.7	684	1,026	25
214	2.3	920	1,380	33