



# United States Department of the Interior

Fish and Wildlife Service  
Arizona Ecological Services Office

9828 N. 31st Avenue Ste C3

Phoenix, AZ 85051

Telephone: (602) 242-0210 Fax: (602) 242-2513



AESO/SE  
22410-2011-F-0210

September 27, 2016

Ms. Laura Jo West, Forest Supervisor  
Coconino National Forest  
1824 South Thompson Street  
Flagstaff, Arizona 86001

RE: Rock Pits Project, Coconino and Kaibab National Forests

Dear Ms. West:

Thank you for your request for formal 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 and biological assessment (BA) were dated March 29, 2016, and received by us on April 4, 2016. This consultation concerns the potential effects of activities associated with the development and operation of rock pits on the Coconino and Kaibab National Forests in Coconino and Yavapai Counties, Arizona. The Forest Service has determined that the proposed action may affect, and is likely to adversely affect, the threatened Mexican spotted owl (*Strix occidentalis lucida*) and its critical habitat.

You have also requested our concurrence that the proposed action may affect, but is not likely to adversely affect the endangered California condor (*Gymnogyps californianus*) outside of the 10j experimental nonessential population area, and "is not likely to jeopardize" the condor within the 10j experimental nonessential population area. We concur with your determinations. The basis for our concurrences is found in Appendix A.

You also requested that we provide our technical assistance with respect to compliance with the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) for bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). Our documentation of the Forest Service's implementation of minimization measures to reduce the likelihood of take to eagles is included in Appendix B.

This biological opinion (BO) is based on information provided in the March 2016 BA, conversations and electronic correspondence with your staff, and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern, the rock pit expansion/development project and its effects, or on other subjects

considered in this opinion. A complete administrative record of this consultation is on file at this office.

### Consultation History

Details of the consultation history are summarized in Table 1.

**Table 1.** Summary of Consultation History

Date	Event
April 5, 2011	We received your request for comments on the proposed action.
May 6, 2011	We provided comments on the proposed action.
June 6, 2014	We met with Forest Service staff to discuss preparation of the BA for the project.
July 9, 2014	We provided Forest Service staff comments on review of a draft BA for the project.
January 22, 2015	We received an email request to meet to discuss the draft BA.
January 27 – February 2015	We discussed the project BA via email and meetings with your staff.
November 9, 2015	We were notified that the BA for the project would be completed soon.
April 4, 2016	We received the final BA and request for informal section 7 consultation on the project.
June 2016	We discussed determinations with the lead biologist for the project.
August 17, 2016 and September 13, 2016	We recommended to Forest Service staff that the determination for the Mexican spotted owl should be modified to “may affect, likely to adversely affect” based upon potential adverse effects to their habitat from the proposed action. In addition, critical habitat is included in the assessment (missing from cover letter). We also recommended that the California condor determinations should be modified to address condors within (“not likely to jeopardize”) and outside (“may affect, not likely to adversely affect”) of the experimental nonessential populations. We also noted that there is no critical habitat for the California condor in Arizona, so critical habitat would not be addressed. Forest Service staff concurred with our recommendations.
September 21, 2016	We submitted a draft BO to Forest Service staff for review.
September 22, 2016	We received your comments on the draft BO.

## **BIOLOGICAL OPINION**

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

The complete description of the proposed action and effects analysis can be found in your March 2016 BA and other supporting information in the administrative record. These documents are included herein by reference. This consultation covers effects to the species and their habitats discussed herein for a 10-year period.

The project area consists of 39 individual rock pits totaling 427.5 acres, including 14.6 acres of pit reclamation. The action includes the development, operation, and maintenance of the pits, the hauling of materials on rock pit access roads and on level 3 roads, and the maintenance of these same roads. The transportation and use of the rock pit materials for specific projects that utilize, maintain, or repair level 1 (roads closed to motor vehicle use) and 2 roads (roads maintained for high-clearance vehicles) would be analyzed and approved as appropriate for those projects in separate consultation. The materials from the rock pits may be used for a variety of road maintenance activities, from general maintenance of primary roads to construction or rehabilitation of temporary roads (which had been authorized under other NEPA decisions). The proposed development and reclamation of rock pits will include hauling of equipment and aggregate materials to and from the pits for use in general and project-specific road maintenance, road repair, and erosion control. Pits may also be used by other organizations such as county, city, or state entities, when approved under a special use permit with required terms and conditions. Many projects using aggregate materials cannot be predicted because they are needs-based (e.g., spot gravelling roads for general maintenance after a powerful monsoon storm), or are scheduled in a way that allows for continual adjustment (e.g., permitting county access to a pit that can be used for maintenance of county roads).

A total of 37 pits would be created or expanded across the Coconino and Kaibab National Forests (see Table 2 in BA, pp. 9-11). Eighteen of pits are on the Coconino National Forest and 19 are on the Kaibab National Forest. The rock pits average approximately 11.2 acres in size, but they range in size from 3.9 to 23.8 acres. In total, about 412.9 acres of vegetation would be removed due to pit development, including about 202 acres for new pits and 211 acres for pit expansion around existing pits. Three existing rock pits (14.6 acres) are designated for reclamation as part of this project.

Development and expansion of rock pits involves disturbance of the surface conditions. First the existing vegetation is removed and then heavy equipment such as excavators, bulldozers, and backhoes move and stockpile topsoil and non-source materials onsite. Extraction, processing, and transport depend on the source material. Basalt and limestone pits require crushing and sorting and thus tend to be larger than cinder pits so that adequate processing and stockpiling of materials can occur on-site. Cinder materials usually require the least amount of processing. Once fully processed, materials are loaded onto a dump truck or other hauling vehicle by backhoe, conveyer belt, or other equipment to transport the rock. The space needed for processing equipment, stockpiling materials, and loading is included in the acres reported for each rock pit.

Basalt and limestone rock usually requires blasting, mechanical extraction, crushing, and screening to provide materials of the size and consistency needed for road surfacing. A production cycle or crush and stockpile operation usually involves two to three days of drilling followed by a single blast and then onsite processing. Charges are typically detonated 10 to 20 feet below ground. Blasted material is extracted with front-end loaders, dozers, and/or excavators. The material is then passed through a multi-phase portable crushing unit often consisting of a jaw crusher, power screen, conical crusher and conveyor belt system. These operations typically take about 20-25 working days with the crusher and other equipment (i.e., loader, dozer, excavator, or backhoe) operating 8-10 hours per day during daylight hours. Each forest will have an operationally active pit every other year, alternating between the Coconino and Kaibab National Forests. However, sometimes one of the forests will have a second pit in operation in the same year. Operations have been limited to one of three dedicated pits per forest in recent years. The work is contracted, so annual operations can vary with available funding. The proposed action would expand the number of source locations, but the number of active pits in any given year is not likely to change by much, if at all.

In general, the expected annual schedule for overall rock pit activities would involve about three to eight weeks of work removing soil and materials from the pits, blasting and excavating, processing by means of a crusher, and stockpiling the material. Hauling would be accomplished in about two weeks with 8-10 truck trips to complete several round-trips each day. On average, there would be two use periods of about 3 weeks per year to accomplish haul for general road maintenance. Hauling could overlap with the extraction and processing of aggregate materials.

### **Conservation Measures**

A number of project-specific resource protection measures have also been identified as part of the proposed action. These resource protection measures are designed to avoid, minimize, and mitigate potential impacts from development and operation of the proposed rock pits and rock pit expansions and are listed in Table 3 of the BA (pp. 12-14). Measures designed to minimize effects to the Mexican spotted owl are listed below:

- All areas with potential Mexican spotted owl habitat, including a one-half mile buffer around the site, would be surveyed for two years prior to implementation.
- If surveys identify new owl sites, there would be no rock pit development within the occupied areas (PAC) or within 0.25 mile of occupied areas during the Mexican spotted owl breeding season (March 1 to August 31).
- No ground disturbance from rock pit development or operation would occur in known PACs or within 0.25 mile of nests and roosts during the breeding season.
- Reclamation activities on the Bald Mesa #2 pit (re-vegetate and discourage unauthorized off-road vehicle use), which is adjacent to the Bald Mesa PAC would not occur during the breeding season.
- Future hauling from or to the Thomas 2 pit would occur outside the breeding season.

- Haul trucks will maintain a speed limit of  $\leq 25$  mph on National Forest System when driving through PACs during the breeding season.
- In areas of new pit development in Mexican spotted owl habitat, trees would be felled outside of the breeding season.
- Rock hauling for general road maintenance (Level 3 roads) would not occur in or within 0.25 mile of PACs anywhere on the Coconino or Kaibab National Forests during the breeding season.
- Hauling of pit materials through special use permits would not occur in or within 0.25 mile of PACs anywhere Coconino or Kaibab National Forests during the breeding season.

### **Action Area**

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR § 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment.

The action area consists of the 39 individual rock pits totaling 427.5 acres, including 14.6 acres of pit reclamation and rock pit access and level 3 roads used for the hauling of materials (see Figures 1, 2, and 3 on pages 15-17 in the BA). Because we are assessing the effects to the action to the Mexican spotted owl, the action area also includes a 0.25 mile buffer adjacent to owl habitat throughout the entire action area.

## **ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS**

### **Jeopardy Determination**

In accordance with policy and regulation, the jeopardy analysis in this BO relies on four components: (1) the Status of the Species, which evaluates the Mexican spotted owl range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the Mexican spotted owl in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the Mexican spotted owl; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species

in the wild. The jeopardy analysis in this BO considers the range-wide survival and recovery needs of the species and the role of the action area in its survival and recovery as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### **Adverse Modification Determination**

This BO relies on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02<sup>a</sup>. In accordance with policy and regulation, the adverse modification analysis in this BO relies on four components: 1) the *Status of Critical Habitat*, which evaluates the range-wide condition of designated critical habitat for the Mexican spotted owl in terms of physical and biological features<sup>b</sup>, the factors responsible for that condition, and the intended value of the critical habitat for conservation of the species; 2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the value of the critical habitat for conservation of the species in the action area; 3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the physical and biological features and how that will influence the value of affected critical habitat units for conservation of the species; and 4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the physical and biological features and how that will influence the value of affected critical habitat units for conservation of the species.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the species’ critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would not preclude or significantly delay the current ability for the physical and biological features to be functionally established in areas of currently unsuitable but capable habitat) such that the value of critical habitat for the conservation of the species is not appreciably diminished.

### **STATUS OF THE SPECIES AND CRITICAL HABITAT**

In 1993, the FWS listed the Mexican spotted owl (hereafter, referred to as Mexican spotted owl, spotted owl, and owl) as threatened under the Act. The FWS appointed the Mexican spotted owl Recovery Team in 1993 (USFWS 1993), which produced the Recovery Plan for the Mexican spotted owl in 1995 (USFWS 1995). The FWS released the final Mexican spotted owl Recovery Plan, First Revision (Recovery Plan) in December 2012 (USFWS 2012a). Critical habitat was designated for the spotted owl in 2004 (USFWS 2004).

---

<sup>a</sup> See 81 FR 7214

<sup>b</sup> The term “primary constituent elements” was introduced in critical habitat designation regulations (50 CFR 424.12) to describe aspects of “physical or biological features”, which are referenced in the statutory definition of critical habitat. The Services have removed the term “primary constituent elements” and returned to using the statutory term “physical or biological features” (81 FR 7414). Existing critical habitat designations will not be republished to reflect this change; however, in future rules we will discontinue using the term “primary constituent elements” and instead will use “physical and biological features”.

A detailed account of the taxonomy, biology, and reproductive characteristics of the Mexican spotted owl is found in the Final Rule listing the owl as a threatened species (USFWS 1993), the original Recovery Plan (USFWS 1995), and in the revised Recovery Plan (USFWS 2012a). The information provided in those documents is included herein by reference.

The spotted owl occurs in forested mountains and canyonlands throughout the southwestern United States and Mexico (Gutiérrez et al. 1995). It ranges from Utah, Colorado, Arizona, New Mexico, and the western portions of Texas south into several States of Mexico. Although the owl's entire range covers a broad area of the southwestern United States and Mexico, it does not occur uniformly throughout its range. Instead, the Mexican spotted owl occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Known owl locations indicate that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

In addition to this natural variability in habitat influencing owl distribution, human activities also vary across the owl's range. The combination of natural habitat variability, human influences on owls, international boundaries, and logistics of implementation of the Recovery Plan necessitates subdivision of the owl's range into smaller management areas. The 1995 Recovery Plan subdivided the owl's range into 11 "Recovery Units" (RUs): six in the United States and five in Mexico. In the revision of the Recovery Plan, we renamed RUs as "Ecological Management Units" (EMUs) to be in accord with current FWS guidelines. We divide the Mexican spotted owl's range within the United States into five EMUs: Colorado Plateau (CP), Southern Rocky Mountains (SRM), Upper Gila Mountains (UGM), Basin and Range-West (BRW), and Basin and Range-East (BRE) (USFWS 2012a, p. 9). Within Mexico, the Revised Recovery Plan delineated five EMUs: Sierra Madre Occidental Norte, Sierra Madre Occidental Sur, Sierra Madre Oriental Norte, Sierra Madre Oriental Sur, and Eje Neovolcanico.

Mexican spotted owl surveys since the 1995 Recovery Plan have increased our knowledge of owl distribution, but not necessarily of owl abundance. Population estimates, based upon owl surveys, recorded 758 owl sites from 1990 to 1993, and 1,222 owl sites from 1990 to 2004 in the United States. The Recovery Plan (USFWS 2012a) lists 1,324 known owl sites in the United States. An owl site is an area used by a single or a pair of adult or subadult owls for nesting, roosting, or foraging. The increase in number of known owl sites is mainly a product of new owl surveys being completed within previously unsurveyed areas (e.g., several National Parks within southern Utah, Grand Canyon National Park in Arizona, Guadalupe National Park in West Texas, Guadalupe Mountains in southeastern New Mexico and West Texas, Dinosaur National Monument in Colorado, Cibola National Forest [NF] in New Mexico, and Gila NF in New Mexico). Thus, an increase in abundance in the species range-wide cannot be inferred from these data (USFWS 2012a). However, we do assume that an increase in the number of areas considered to be occupied is a positive indicator regarding owl abundance.

We are currently working with the Southwestern Region of the Forest Service to conduct a pilot study for the population monitoring recommended in the Revised Recovery Plan (USFWS 2012a). The effort to conduct this work has occurred during the 2014-2016 breeding seasons on National Forest System (NFS) lands. The Recovery Team, Forest Service, and the Rocky

Mountain Bird Observatory (RMBO, contractor) are continuing to collect data and develop a strategy for incorporating additional lands (e.g., National Park Service, Bureau of Land Management, Department of Defense) into the monitoring. Currently, based on the work conducted by the Forest Service and RMBO, we have a process for conducting rangewide population monitoring, but we need to further develop the potential strategy for collecting rangewide habitat monitoring data.

Two primary reasons were cited for the original listing of the Mexican spotted owl in 1993: (1) the historical alteration of its habitat as the result of timber-management practices; and, (2) the threat of these practices continuing. The danger of stand-replacing fire was also cited as a looming threat at that time. Since publication of the original Recovery Plan (USFWS 1995), we have acquired new information on the biology, threats, and habitat needs of the Mexican spotted owl. Threats to its population in the U.S. (but likely not in Mexico) have transitioned from commercial-based timber harvest to the risk of stand-replacing wildland fire (USFWS 2012a). Recent forest management has moved away from a commodity focus and now emphasizes sustainable ecological function and a return toward pre-settlement fire regimes, both of which have potential to benefit the spotted owl. However, as stated in the revised Recovery Plan (USFWS 2012), there is much uncertainty regarding thinning and burning treatment effects and the risks to owl habitat with or without forest treatment as well. Therefore, efforts to reduce fire risk to owls should be designed and implemented to evaluate the effects of treatments on owls and retention of or movement towards desired conditions.

Southwestern forests have experienced larger and more severe wildland fires from 1995 to the present, than prior to 1995. Climate variability combined with unhealthy forest conditions may also synergistically result in increased negative effects to habitat from fire. The intensification of natural drought cycles and the ensuing stress placed upon overstocked forested habitats could result in even larger and more severe fires in owl habitat.

Currently, high-severity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic wildland fire is probably the greatest threat to the Mexican spotted owl within the action area. As throughout the West, fire severity and size have been increasing within this geographic area. Landscape level wildland fires, such as the Rodeo-Chediski Fire (2002), the Wallow Fire (2011), and the Whitewater-Baldy Complex (2012) have resulted in the loss of tens of thousands of acres of occupied and potential nest/roost habitat across significant portions of the Mexican spotted owl's range. Although owls will forage in severely burned areas, habitat is often lacking for nesting and roosting in these areas, particularly when high severity fire affects large patches of habitat (Jones et al. 2016). Fuels reduction treatments, though critical to reducing the risk of severe wildland fire, can have short-term adverse effects to owls through habitat modification and disturbance. As the human population grows in the southwestern United States, small communities within and adjacent to wildlands are being developed. This trend may have detrimental effects to spotted owls by further fragmenting habitat and increasing disturbance during the breeding season.

Global climate variability may also be a threat to the owl. Changing climate conditions may interact with fire, management actions, and other factors discussed above, to increase impacts to owl habitat. Studies have shown that since 1950, the snowmelt season in some watersheds of the

western U.S. has advanced by about 10 days (Dettinger and Cayan 1995, Dettinger and Diaz 2000, Stewart et al. 2004). Such changes in the timing and amount of snowmelt are thought to be signals of climate-related change in high elevations (Smith et al. 2000, Reiners et al. 2003). The impact of climate change is the intensification of natural drought cycles and the ensuing stress placed upon high-elevation montane habitats (IPCC 2007, Cook et al. 2004, Breshears et al. 2005, Mueller et al. 2005). The increased stress put on these habitats is likely to result in long-term changes to vegetation, and to invertebrate and vertebrate populations within coniferous forests and canyon habitats that affect ecosystem function and processes.

Historical and current anthropogenic uses of Mexican spotted owl habitat include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of owl nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing is prevalent throughout the range of the owl and is thought to have a negative effect on the availability of grass cover for prey species. Recreation impacts are increasing throughout the Southwest, especially in meadow and riparian areas. There is anecdotal information and research that indicates that owls in heavily used recreation areas are much more erratic in their movement patterns and behavior.

Several fatality factors have been identified as particularly detrimental to the Mexican spotted owl, including predation, starvation, accidents, disease, and parasites. For example, West Nile Virus also has the potential to adversely impact the Mexican spotted owl. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney et al. 2004). Unfortunately, due to the secretive nature of spotted owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to the owl range-wide.

### *Critical habitat*

The FWS designated critical habitat for the Mexican spotted owl in 2004 on approximately 8.6 million acres (3.5 million hectares) of Federal lands in Arizona, Colorado, New Mexico, and Utah (USFWS 2004). Within the designated boundaries, critical habitat includes only those areas defined as protected habitats (defined as PACs and unoccupied slopes >40 percent in the mixed conifer and pine-oak forest types that have not had timber harvest in the last 20 years) and restricted (now called "recovery") habitats (unoccupied owl foraging, dispersal, and future nest/roost habitat) as defined in the 1995 Recovery Plan (USFWS 1995). The PCEs for Mexican spotted owl critical habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (USFWS 1995). Since owl habitat can include both canyon and forested areas, PCEs were identified in both areas. The PCEs identified for the owl within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the owl's habitat needs for nesting, roosting, foraging, and dispersing are:

- A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 to 45 percent of which are large trees with dbh (4.5 ft above ground) of 12 inches or more;

- A shade canopy created by the tree branches covering 40 percent or more of the ground;
- Large, dead trees (snags) with a dbh of at least 12 inches.
- High volumes of fallen trees and other woody debris;
- A wide range of tree and plant species, including hardwoods; and,
- Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

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

Mexican spotted owl critical habitat also includes some steep-walled rocky canyonlands that occur typically within the Colorado Plateau EMU, but also occur in other EMUs. This habitat does not occur within the action area of this consultation, so the PCEs are not included here or analyzed in this BO.

Overall, the status of the owl and its designated critical habitat has not changed significantly range-wide in the U.S. (which includes Utah, Colorado, Arizona, New Mexico, and extreme southwestern Texas); based upon the information we have, since issuance of the 2012 LRMP BOs for the National Forests in the Southwestern Region of the Forest Service (i.e., see USFWS 2012b). What we mean by this is that the distribution of owls continues to cover the same area, and critical habitat is continuing to provide for the life history needs of the Mexican spotted owl throughout all of the EMUs located in the U.S. We do not have detailed information regarding the status of the Mexican spotted owl in Mexico, so we cannot make inferences regarding its overall status.

However, this is not to say that significant changes have not occurred within the owl's U.S. range. Wildland fire has resulted in the greatest loss of PACs and critical habitat relative to other actions (e.g., such as forest management, livestock grazing, recreation, etc.) throughout the U.S. range of the Mexican spotted owl. These wildland fire impacts have mainly impacted Mexican spotted owls within the UGM EMU (e.g., Slide and Schultz Fires on the Coconino NF, Rodeo-Chediski and Wallow Fires on the Apache-Sitgreaves NF and Whitewater-Baldy Complex on the Gila NF) and BRW EMU (e.g., Horseshoe 2 Fire on the Coronado NF); but other EMUs have been impacted as well (SRM EMU, the Santa Fe NF by the Las Conchas Fire, CP EMU by the Warm Fire). However, we do not know the extent of the effects of these wildland fires on actual owl numbers.

## **ENVIRONMENTAL BASELINE**

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and

private actions that 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. The environmental baseline descriptions provided below are a summary of the available information. A complete description of the environmental baseline for each species can be found in the administrative record for this consultation.

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

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment.

The action area consists of NFS lands and includes the rock pits and areas within 0.25 mile of each rock pit identified for development and operation. The project area is dominated by ponderosa pine and mixed conifer forest communities. Inclusions of aspen, meadows, ephemeral drainages, and springs also occur across the analysis area. Twenty-two of the pits are located in ponderosa pine vegetation cover types and ten of those pits are in areas considered to be Mexican spotted owl recovery and critical habitat (ponderosa pine-Gambel oak). None of the pits to be developed are in PACs and no pit operations would affect mixed conifer forest, riparian habitat, or flowing water.

### **Mexican spotted owl**

#### ***A. Status of the species and critical habitat within the action area***

There are no known PACs (occupied habitat) that will have habitat modified as result of the proposed action. The BA states that the Bald Mesa PAC includes part of the Bald Mesa Pit (this pit is proposed for reclamation), but this PAC was redrawn several years ago to remove the pit from the boundary as part of the Clint's Well Forest Restoration Project (Consultation number 02EAAZ00-2012-I-0390). Therefore, there will be no reclamation activities in a PAC.

There are seven rock pits that will negatively impact recovery (restricted) habitat (see Table 2). There are approximately 47.8 acres of recovery habitat that fall within the footprint for pit development/expansion. The proposed Thomas 2 Pit (19.3 acres) occurs entirely within nest/roost replacement recovery habitat (formerly target/threshold habitat).

The proposed development and operation of rock pits would occur on approximately 40.9 acres of Mexican spotted owl critical habitat. Rock pit development would occur in portions of Upper Gila Mountain (UGM) CHUs 10, 11 and 13 (Table 2).

**Table 2. Acres of existing and proposed rock pits in Mexican spotted owl recovery (restricted) and critical habitat.**

Pit Name	Admin. Unit	Total Acres	Affected MSO Habitat Acres	MSO Habitat Category	Critical Habitat Unit (CHU)
Buck Butte	Coconino	14.5	5.9	Recovery	N/A
Bushy Knoll	Coconino	13.8	1	Recovery	N/A
Cinch Hook	Coconino	18.6	10.7	Recovery	UGM-10
Davenport	Kaibab	15.4	6.8	Recovery	UGM-13
Jackass Knoll	Kaibab	5.4	0.8	Recovery	UGM-13
Ruin	Kaibab	10.8	3.3	Recovery	UGM-13
Thomas 2	Coconino	19.3	19.3	Nest/Roost Replacement Recovery Habitat	UGM-11
<b>TOTAL ACRES</b>		<b>97.8</b>	<b>47.8</b>		<b>40.9</b>

***B. Factors affecting the species and critical habitat within the action area***

In the past several years there have been a number of fire risk reduction and forest restoration projects throughout the project area that have affected the Mexican spotted owl, its habitat, and designated critical habitat. These projects included actions designed to reduce tree density and surface fuels in PACs and steep slopes to limit fire effects in owl habitat. Projects since 2000 on the Coconino National Forest include: the Mormon Lake Basin Fuels Reduction, Kachina Village Forest Health, Eastside Fuels Reduction, Woody Ridge Forest Restoration, Elk Park Fuels Reduction and Forest Health, Hart Prairie Fuels Reduction and Forest Health, Upper Beaver Creek Watershed Improvement, Marshall Fuels Reduction and Forest Health, East Clear Creek Watershed Improvement, Clint's Well Forest Restoration, Fort Valley Jack Smith-Schultz Fuels Reduction, Fort Valley, and Victorine Wildland Urban Interface Projects. With the exception of Elk Park Fuels Reduction Project, which allowed harvesting trees up to 16 inches diameter-at-breast height (dbh) in the Clark PAC, all approved treatments limited removal of trees in PACs to less than nine inches dbh. Projects on the Kaibab National Forest include the Watts Vegetation Management, Airport Fuels Reduction, and Randall Restoration Projects.

More recently, the Bill Williams and the Flagstaff Watershed Protection Projects have been undertaken to remove trees and surface fuels in PACs with the objective of changing potential future fire behavior. These projects involve more intensive thinning treatments in PACs and allowed for temporary road construction in PACs and treatments during the breeding season. The Four Forest Restoration Initiative (4FRI) will mechanically thin trees in 18 PACs with the objective of improving habitat. In reference to the thinning activities approved through the 4FRI EIS, the BA for the Rock Pits Project explains that "the number of PACs actually treated may fall short of the 18 identified PACs as a result of the objection resolution process." The Four Forest Restoration Initiative will also treat 54 PACs with prescribed fire, again with the objective of improving owl habitat. Over 70,000 acres of recovery (restricted) habitat will also be thinned and/or burned as part of 4FRI. Treatments in recovery (restricted) habitat were developed to

improve the key habitat components and primary constituent elements of owl habitat and critical habitat. Monitoring pre-, during, and post-activity, in partnership with the FWS, will determine if these intended objectives are met.

Other factors that have affected owls, PAC and recovery habitat, and critical habitat in the project area include wildfire (including fires managed for resource benefit) and recreation.

## **EFFECTS OF THE ACTION**

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

### ***Effects of the action on the Mexican spotted owl and its habitat***

The direct and indirect effects of the proposed action include impacts from pit development and expansion, roads, and noise disturbance. We summarize the expected effects of each of these actions and evaluate the impacts to the Mexican spotted owl and its critical habitat.

#### **Pit Development and Expansion**

There will be a direct loss of 47.8 acres of Mexican spotted owl recovery (restricted) habitat as a result of pit development and expansion. Approximately 19.3 acres are potential nest/roost replacement recovery habitat that will be modified so that it no longer has any potential to support nesting/roosting owls. The Forest Service states that none of these habitat areas proposed for pit development and/or expansion currently support the forest structure necessary for nesting and roosting because they are located adjacent to existing pit operations and are dominated by rock outcrops or very rocky soils. However, these areas meet the definition of ponderosa pine-Gambel oak habitat and are considered to be Mexican spotted owl recovery habitat; so the loss of these acres will result in an overall loss of owl habitat, albeit small, on the Coconino and Kaibab National Forests.

The only reclamation activities within 0.25 mile of a PAC are at Bald Mesa #2 pit. This pit is adjacent to the Bald Mesa PAC. However, reclamation activities would occur outside of the Mexican spotted owl breeding season (March 1 through August 31), thereby avoiding noise effects to breeding owls from the reclamation activities.

#### **Roads**

Mexican spotted owl recovery habitat would not be affected by development of new roads to access pits. The Thomas 2 Pit has a non-system, existing road in place. While this road would

be improved, no additional loss of habitat would occur. Access to other new pits or expansion areas would not require any new road construction in recovery habitat.

### Noise Disturbance

Implementation of the Rock Pits Project is expected to result in minimal new disturbance effects to owls during the breeding season. Conservation measures would minimize disturbance by:

- Conducting surveys in all potential Mexican spotted owl habitat prior to activities to identify areas for avoiding disturbance during the breeding season;
- Not allowing for rock pit development at new and existing PACs within 0.25 mile during the breeding season;
- Not allowing ground disturbance from rock pit development or operation in known PACs or within 0.25 mile of nests and roosts during the breeding season;
- Future hauling from or to the Thomas 2 pit would occur outside the breeding season;
- Tree felling in areas of new pit development in Mexican spotted owl habitat would be conducted outside of the breeding season;
- Rock hauling for general road maintenance (Level 3 roads) would not occur in or within 0.25 mile of PACs anywhere on the Coconino or Kaibab National Forests during the breeding season; and
- Hauling of pit materials through special use permits would not occur in or within 0.25 mile of PACs anywhere Coconino or Kaibab National Forests during the breeding season.

Disturbance to nesting, roosting, and foraging Mexican spotted owls could still be caused by noise and activity associated with the pit activities. There are a growing number of studies attempting to describe and quantify the impacts of non-lethal disturbance on the behavior and reproduction of wildlife, and Mexican spotted owls in particular. 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 ft and when sound levels are in excess of 95 dBA; and 3) the tendency to flush from a nest declines with experience or habituation to the noise, although the startle response cannot be completely eliminated by habituation. Delaney et al. (1999) found that ground-based disturbances elicited a greater flush response than aerial disturbances. Delaney and Grubb (2004) determined that spotted owls are capable of hearing sounds from road maintenance equipment to a distance of at least 0.25 mile. Our guidance is to limit potentially disturbing activities to areas  $\geq 0.25$  mile from Mexican spotted owl nest sites during the breeding season (March 1 - August 31). This corresponds well with the Delaney et al.'s (1999) 0.25 mile threshold for alert responses to helicopter flights. In addition, Delaney et al. (1999) found that Mexican spotted owls did not flee from helicopters when caring for young at the nest, but fled readily during the post-fledgling period. This may be a result of optimal fleeing decisions that balance the cost-benefit of fleeing. Frid and Dill (2002) hypothesize that this may be explained using predator risk-disturbance theory and perhaps the cost of an adult spotted owl fleeing during the nestling period may be higher than during the post-fledgling period.

The maximum values of estimated noise levels for most of the heavy equipment associated with rock pit development would be in the 50 to 60 dB range for PAC edges 0.3 miles distant. This decreases further to 40 to 50 dB range for PAC edges 0.5 miles away. Equipment noise of 75 to 92 dB at 50 feet away from the loudest side would range from about 34.5 to 51.5 dB at 1 mile away. These sound level estimates are considered maximum estimates because they do not account for weather, forest, or topography damping the noise further down. Therefore, although disturbance to nesting, roosting, and foraging Mexican spotted owls could still be caused by noise and activity associated with the pit activities, given the distances to PACs (0.3 mile is the nearest distance from a pit to a PAC boundary) and the timing restrictions, we do not expect noise disturbance to result in changes in owl behavior, the use of habitat by owls, or negative impacts to breeding owls.

Noise disturbance from hauling would occur at a later time and so is considered an indirect effect. Most hauling would be done for road maintenance and preparation in association with future site-specific projects, and hence all potential hauling impacts and placement of pit materials on roads cannot be accounted for in this consultation. However, this consultation covers hauling and placement of materials on level 3 system roads, which accounts for the path from each pit to the project area. Level 3 roads are main transportation corridors that are open and maintained for travel by a standard passenger car. Effects associated with hauling off of the main roads and road maintenance in support of specific project areas in or within 0.25 mile of Mexican spotted owl habitat will be addressed through project-specific consultations. Hauling of rock materials in association with this consultation will not occur in PACs or within 0.25 mile of PAC boundaries during the nesting season.

During the nesting season, noise disturbance to owls from this project would likely be limited to site-specific, short-term traffic (e.g., intermittent truck traffic over the course of days or a week) in restricted/recovery habitat. Because these areas are outside of known PACs, potential effects to breeding owls will not occur.

### Summary

In summary, there will be a direct loss of 47.8 acres of Mexican spotted owl recovery (restricted) habitat as a result of pit development and expansion. Approximately 19.3 acres are potential nest/roost replacement recovery habitat will be modified so that it no longer has any potential to support nesting/roosting owls. However, there will be no new road construction in Mexican spotted owl habitat and limited noise disturbance to PACs from the proposed action during the breeding season.

### ***Effects of the action on Mexican spotted owl critical habitat***

In our analysis of the effects of the action on critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the PCEs that were the basis for determining the habitat to be critical. To determine if an action results in adverse modification

of critical habitat, we must also evaluate the current condition of all designated CHUs, and the PCEs of those units, to determine the overall ability of all designated critical habitat to support recovery. Further, the functional role of each of the CHUs in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

Below, we describe the PCEs related to forest structure and maintenance of adequate prey species and the effects from implementation of the Rock Pits Project. All critical habitat acres (40.9 acres) within the Rock Pit Project area will be modified such that these acres will likely no longer provide habitat for Mexican spotted owls, although they may still provide some level of foraging habitat. Of this habitat, 19.3 acres is considered potential nest/roost replacement recovery habitat.

Primary Constituent Elements related to forest structure:

*PCE:* A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with dbh of 12 inches or more.

*Effect:* The development and/or expansion of pits will remove trees from the sites, regardless of size, in order to meet the project objective. The recovery habitat in this project consists only of ponderosa pine-Gambel oak habitat, so no mixed conifer or riparian forest types would be affected. The removal of this habitat will adversely affect the PCE's within the areas proposed for treatment (Table 2). However, the amount of habitat to be modified is an extremely small component of the landscape, and the use of these areas for sourcing road material will aid in forest restoration and fire management activities throughout the action area. These activities will aid in long-term benefits to this PCE in critical habitat throughout the action area and within the CHUs affected by this project.

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

*Effect:* We expect that tree shade canopy would be reduced or completely removed where it occurs within the 40.9 acres of critical habitat. However, the amount of habitat to be modified is an extremely small component of the landscape, and the use of these areas for sourcing road material will aid in forest restoration and fire management activities throughout the action area. These activities will aid in long-term benefits to this PCE in critical habitat throughout the action area.

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

*Effect:* Large, dead trees (snags) are not common on the acres included in pit development and/or expansion. Therefore, because there will be almost no loss of large snags from this project, the function and conservation role of this PCE in CHUs UGM-10, 11, and 13 would not be compromised by the proposed action.

*Primary Constituent Elements related to maintenance of adequate prey species:*

*PCE:* High volumes of fallen trees and other woody debris.

*Effect:* High volumes of fallen trees and other woody debris are not common on the acres included in pit development and/or expansion. Therefore, because there will be almost no loss of large logs from this project, the function and conservation role of this PCE in CHUs UGM-10, 11, and 13 would not be compromised by the proposed action.

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

*Effect:* The acres of critical habitat included in the proposed pit development and expansion do not include a wide range of tree and plant species, or hardwoods. Although Gambel oak is present, it is not prevalent in the 40.9 acres of critical habitat affected by the proposed action. Therefore, because there will be almost no effect to this PCE from this project, the function and conservation role of this PCE in CHUs UGM-10, 11, and 13 would not be compromised by the proposed action.

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

*Effect:* There will be some level of plant cover that remains at rock pit expansion and development sites. However, these sites are and will be used to mine basalt and cinder rock for road surfacing and not to create habitat. In addition, reclamation activities, particularly at the Bald Mesa #2 pit, will aid in increasing plant cover and promoting plant regeneration. In general, we do not expect active rock pits to provide foraging habitat for owls, so overall there will be a loss of this PCE within the 40.9 acres. The amount of habitat to be modified is an extremely small component of CHUs UGM-10, 11, and 13. In addition, as stated above, the use of these areas for sourcing road material will aid in forest restoration and fire management activities throughout the action area, which will aid in long-term benefits to this PCE in critical habitat throughout the action area. Therefore, the function and conservation role of this PCE across the action area and within the CHUs affected by this project would not be compromised by the proposed action.

*Effects of the action on the role of critical habitat in recovery*

Adverse effects from the Rock Pits Project are not expected to negatively affect Mexican spotted owl recovery or further diminish the conservation contribution of critical habitat within CHUs UGM-10, 11, and 13 to the recovery of the Mexican spotted owl. The Rock Pits Project includes objectives and species protection measures in accordance with the Recovery Plan (USFWS 2012a). These actions were identified by the Recovery Team as being necessary to conserve and recover the Mexican spotted owl, and the Rock Pits Project will implement these actions adjacent to designated critical habitat within the action area. Designated critical habitat includes all PACs and recovery habitat (unoccupied suitable spotted owl habitat) within the project area. These actions include the following:

- The Forest Service within the project area has and continues to designate 600 acres surrounding known Mexican spotted owl nesting and roosting sites. PACs are established around owl sites and are intended to protect and maintain occupied nest/roost habitat. Nesting and roosting habitat is rare across the range of the Mexican spotted owl, and by identifying these areas, which are also critical habitat, for increased protection, the Forest Service is aiding in recovery.
- Outside of the actual rock pit areas, the Forest Service has identified and is managing mixed conifer and ponderosa pine-oak forests that have potential for becoming Mexican spotted owl recovery nest/roost replacement habitat, or are currently providing habitat for foraging, dispersal, or wintering habitats. Nesting and roosting habitat is a limiting factor for the owl throughout its range. By managing critical habitat for future nest/roost replacement habitat, the Forest Service is aiding in recovery, even though this action will result in the loss of 40.9 acres of critical habitat.
- The purpose and need of this project is to provide source material for road surfacing across the Coconino and Kaibab National Forests for maintaining/improving public safety on current level-3 roads, for watershed protection (e.g., minimize erosion), and to increase the operational ability of the Forest Service to conduct forest restoration and fuels reduction activities that will aid in protecting owl PACs from high-severity wildland fire and improve forest sustainability (e.g., thinning and prescribed burning). This management will ensure that Mexican spotted owl habitat continues to exist on the Coconino and Kaibab National Forests and that critical habitat will continue to retain its function for conservation and recovery of the owl.

Over the long-term, the loss of these 40.9 acres of critical habitat will support actions that are intended to increase the sustainability and resiliency of Mexican spotted owl habitat (particularly through fuels management and forest restoration actions). Therefore, implementation of the Rock Pits Project is not expected to further diminish the conservation contribution of critical habitat to the recovery of the Mexican spotted owl.

## **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.

Climate change, in combination with drought cycles, is likely to exacerbate existing threats to the owl's habitats in the southwestern U.S., now and into the foreseeable future. Increased and prolonged drought associated with changing climatic patterns will result in continued warming and drying of forested habitats, will likely alter vegetation structure and composition, and will reduce the amount and quality of nesting and roosting habitat for Mexican spotted owls in the action area. However, implementation of forest restoration and fuels reduction projects such as

4FRI and the Flagstaff Watershed Protection Project should help to mitigate some of the long-term effects of climate change on Mexican spotted owl habitat.

The main non-Federal activities that may impact the Mexican spotted owl habitat are loss of habitat through development of private inholdings for home sites and related disturbance at these properties. Within these private lands, there is the potential for activities that create disturbance or removal of Mexican spotted owl habitat components on private lands, such as roads, grazing, mining, recreation activities, and fuel treatments. Mexican spotted owl critical habitat has not been designated on non-Federal lands; there are no anticipated cumulative effects to Mexican spotted owl critical habitat from non-Federal actions. The Navajo Nation owns a 140-acre parcel in the middle of the project area that borders the Mount Elden PAC. The tribe has partnered with the City of Flagstaff to complete vegetation treatments on about 105 acres within this parcel. Thirty-five acres of hand thinning was completed in the fall of 2014 with piles planned to be burned in 2016. The remaining 70 acres is planned for mechanical treatments in coordination with actions on Forest Service managed-lands. There are no plans for development of the parcel.

## CONCLUSION

After reviewing the current status of the Mexican spotted owl and its critical habitat, the environmental baseline for the action area, the effects of the proposed Rock Pits Project and the cumulative effects, it is our biological opinion that the construction, development, use, and reclamation of the pits, as proposed, is not likely to jeopardize the continued existence of the Mexican spotted owl, and is not likely to destroy or adversely modify designated critical habitat for the Mexican spotted owl. We base this conclusion on the following:

- The proposed action contains conservation measures that will protect owls from noise disturbance during the breeding season.
- Over the long-term, the loss of these 47.8 acres of recovery (unoccupied habitat) will support actions that are intended to increase the sustainability and resiliency of Mexican spotted owl habitat (particularly through fuels management and forest restoration actions). Therefore, implementation of the Rock Pits Project is not expected to further diminish the conservation contribution of critical habitat to the recovery of the Mexican spotted owl.
- Based on the discussion provided in the *Effects to Mexican Spotted Owl Critical Habitat* section above, CHUs UGM-10, 11, and 13 have approximately 40.9 acres that will no longer function as habitat for owls. However, none of this habitat is currently supporting nesting or roosting owls or contains all of the PCEs. The loss of this habitat will in no way affect the ability of the CHUs UGM-10, 11, and 13 to serve the function and conservation role of critical habitat for the Mexican spotted owl.

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

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

### Amount or Extent of Take Anticipated

The FWS does not anticipate the proposed action will incidentally take any Mexican spotted owls for the following reasons:

1. No occupied Mexican spotted owl habitat (PACs) will be affected by the proposed action as no PAC habitat will be modified.
2. Potential noise effects to owls from the proposed action will be insignificant and discountable. Pit development, expansion, reclamation, and hauling associated with this project will not occur within 0.25 mile of PACs during the Mexican spotted owl breeding season (March 1 through August 31).
3. All potential Mexican spotted owl habitat associated with the project, including a one-half mile buffer around the site, would be surveyed for two years prior to project implementation to ensure no owls are present. If owls are located and the area meets the definition of an owl site, a PAC will be designated.
4. Although 47.8 acres of recovery habitat (including 19.3 acres of nest/roost replacement recovery habitat) will be lost to pit development and expansion, this habitat does not currently support nesting/roosting owls. In addition, the 47.3 acres consists of eight areas that range in size from 0.8 to 19.3 acres. Although the loss of this habitat will result in adverse effects to dispersing and foraging owls, it does not create significant gaps in habitat that could affect owl movement nor will it result in the harm or harassment of individual owls.

**Disposition of Dead or Injured Listed Species**

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, NM 87113; 505-248-7889) 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 the Forest Service work with the FWS to ensure that the 18 PACs proposed for mechanical treatment as part of the 4FRI Project are treated as described in the 4FRI BO (Consultation #22140-2011-F-0145).
2. We recommend that the Forest Service continue to work with the FWS to ensure that rock pit and other industrial development on National Forest System lands is not conducted in listed or sensitive species habitat.

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 action outlined in your request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required when 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.

Certain project activities may also affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712). The MBTA prohibits the taking, killing,

possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the FWS. If you think migratory birds will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project. More information on the MBTA and available permits can be retrieved from <http://www.fws.gov/migratorybirds> and <http://www.fws.gov/migratorybirds/mbpermits.html>.

In keeping with our trust responsibilities to American Indian Tribes, we encourage you to continue to coordinate with the Bureau of Indian Affairs in the implementation of this consultation and, by copy of this biological opinion, are notifying the Hopi Tribe and Navajo Nation of its completion. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department.

We appreciate the Forest Service's efforts to identify and minimize effects to listed species from this project. Please refer to the consultation number, 22410-2011-F-0210 in future correspondence concerning this project. Should you require further assistance or if you have any questions, please contact Shaula Hedwall (928-556-2118) or Brenda Smith (928-556-2157).

Sincerely,



Steven L. Spangle  
Field Supervisor

cc (electronic):

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ  
Forest Supervisor, Kaibab National Forest, Williams, AZ  
Forest Biologist, Coconino National Forest, Flagstaff, AZ  
Forest Biologist, Kaibab National Forest, Williams, AZ  
District Biologist, Flagstaff Ranger District, Coconino National Forest, Flagstaff, AZ  
Zone Biologist, Flagstaff/Mogollon Ranger Districts, Coconino National Forest, Flagstaff, AZ  
District Biologist, Red Rock Ranger District, Coconino National Forest, Sedona, AZ  
District Biologist, Williams Ranger District, Kaibab National Forest, Williams, AZ  
Chairman, Hopi Tribe, Kykotsmovi, AZ  
Director, Cultural Preservation Office, Hopi Tribe, Kykotsmovi, AZ  
Senior Archaeologist, Cultural Preservation Office, Hopi Tribe, Kykotsmovi, AZ  
President, Navajo Nation, Window Rock, AZ  
Director, Historic Preservation Department, Navajo Nation, Window Rock, AZ  
Director, Western Regional Office, Bureau of Indian Affairs, Phoenix, AZ  
Branch Chief, Environmental Quality Services, Western Regional Office, Bureau of Indian Affairs, Phoenix, AZ

**LITERATURE CITED FOR BIOLOGICAL OPINION**

- Breshears, D.D., N.S. Cobb, P.M. Rich, K.P. Price, C.D. Allen, R.G. Balice, W.H. Romme, J.H. Kastens, M.L. Floyd, J. Belnap, J.J. Anderson, O.B. Myers, and C.W. Meyers. 2005. Regional vegetation die-off in response to global-change-type drought. *Proceedings of the National Academy of Sciences, USA (PNAS)* 102(42): 15144-48.
- Cook, E.R., C.A. Woodhouse, C.M. Eakin, D.M. Meko, and D.W. Stahle. 2004. Long-term aridity changes in the western United States. *Science* 306: 1015-1018.
- Courtney, S.J., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Guitierrez, J.M. Marzluff, and L. Sztukowski. 2004. Scientific Evaluation of the Status of the Northern Spotted Owl. Sustainable Ecosystems Institute, Portland, Oregon. 508 pp.
- Delaney, D.K., T.G. Grubb, and L.L. Pater. 1997. Effects of helicopter noise on nesting Mexican spotted owls. A report to the U.S. Air Force 49 CES/CEV, Holloman Air Force Base. Project Order No. CE P.O. 95-4. 49 pp.
- Delaney, D. K., T. G. Grubb, and P. Beier. 1999. Activity patterns of nesting Mexican spotted owls. *Condor* 101:42-49.
- Delaney, D. K. and T.G. Grubb. 2004. Sound recordings of road maintenance equipment on the Lincoln National Forest, New Mexico. Res. Pap. RMRS-RP-49. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 56 pp.
- Dettinger, M.D. and D.R. Cayan. 1995. Large scale atmospheric forcing of recent trends toward early snowmelt runoff in California. *Journal of Climate* 8: 606-623.
- Dettinger, M.D. and H.F. Diaz. 2000. Global characteristics of streamflow seasonality and variability. *Journal of Hydrometeorology* 1: 289-310.
- Frid, A. and L. Dill. 2002. Human-caused disturbance stimuli as a form of predation risk. *Conservation Ecology* 6(1):11.[online] URL: <http://www.consecol.org/vol6/iss1/art11>
- Gutiérrez, R. J., A. B. Franklin, and W. S. LaHaye. 1995. Spotted Owl (*Strix occidentalis*). The birds of North America. The Academy of Natural Sciences Philadelphia, and The American Ornithologists Union, Washington, D.C. No. 179. 28 pp.
- Intergovernmental Panel on Climate Change (IPCC). 2007. Summary for policy makers. In: *Climate Change 2007: The physical science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Quin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available at <http://www.ipcc.ch/>.

- Jones, G.M., R.J. Gutiérrez, D.J. Tempel, S.A. Whitmore, W.J. Berigan, and M.Z. Peery. 2016. Mega-fires: an emerging threat to old-forest species. *Frontiers in Ecology and the Environment* 16(4):300-306.
- Mueller, R.C., C.M. Scudder, M.E. Porter, R.T. Trotter III, C.A. Gehring and T.G. Whitham. 2005. Differential tree mortality in response to severe drought: Evidence for long-term vegetation shifts. *Journal of Ecology* 93(6): 1085-1093.
- Reiners, W.A., W.L. Baker, J.S. Baron, D.M. Debinski, S.A. Elias, D.B. Fagre, J.S. Findlay, L.O. Mearns, D.W. Roberts, T.R. Seastedt, T.J. Stohlgren, T.T. Veblen, and F.H. Wagner. 2003. Natural Ecosystems 1: The rocky mountains (pp. 145-184). *In* Wagner, F.H. (Ed.), *Preparing for Climate Change: Rocky Mountain/Great Basin Regional Assessment Team for the U.S. Global Change Research Program*. Utah State University. 240 pp.
- Smith, S.J, T. Wigley, and J.A. Edmonds. 2000. A new route toward limiting climate change? *Science* 290 (5494): 1109-1110.
- Stewart, I.T., D.R. Cayan, and M.D. Dettinger. 2004. Changes in snowmelt runoff timing in western North American under a “business as usual” climate change scenario. *Climate Change* 62: 217-232.
- U.S. Department of Interior, Fish and Wildlife Service (USFWS). 1993. Endangered and threatened wildlife and plant: final rule to list the Mexican spotted owl as a threatened species. *Federal Register* 58:14248-14271.
- \_\_\_\_\_. 1995. Recovery Plan for the Mexican Spotted Owl: Vol. I. Albuquerque, New Mexico. 172 pp.
- \_\_\_\_\_. 1996. Conducting section 7 consultation on Mexican spotted owls and critical habitat policy. Memorandum from Regional Director to Arizona and New Mexico Field Supervisors, July 1, 1996. Albuquerque, NM. 3pp.
- \_\_\_\_\_. 2004. Endangered and threatened wildlife and plants; final designation of critical habitat for the Mexican Spotted Owl: final rule. *Federal Register* 69(168): 53182-53230.
- \_\_\_\_\_. 2012. Recovery plan for the Mexican spotted owl (*Strix occidentalis lucida*), First Revision. Albuquerque, New Mexico. 414 pp.
- \_\_\_\_\_. 2012b. Biological and Conference Opinion Continued Implementation of the LRMP for the Coconino National Forest of the Southwestern Region. Cons. #2012-F-0004, March 30, 2012. Albuquerque, NM. 196 pp.

**APPENDIX A – CONCURRENCE****California condor**

Proposed rock pit locations are split nearly evenly between the experimental non-essential population area north of Interstate 40 (n = 19) and National Forest System lands south of Interstate 40 (n = 18). Eighteen of the pits in the experimental population area are south of Grand Canyon National Park and one rock pit, Big Ridge, is on the North Kaibab Ranger District where there is common use by condors. If a condor is seen at or adjacent to any rock pit or site within the action area, the following conservation measures would be applied:

1. Contractors and/or Forest Service personnel will be advised of the possibility of California condors in the project area so they are aware of their obligations. Should a condor land near project activities, contractors will be instructed not to haze condors.
2. All contractors will be instructed to avoid interacting with condors and to immediately contact the appropriate Forest Service personnel if they occur in the project area. Sighting locations will be forwarded to the Peregrine Fund and the FWS.
3. Any project activity that may cause imminent harm to condors will temporarily cease until permitted personnel determine the correct course of action or the birds leave the site.
4. Project-related work areas will be kept clean (e.g., trash disposed of, scrap materials picked-up, etc.) in order to minimize the possibility of condors accessing inappropriate materials. The Forest Service will conduct site visits to ensure sites are clean.
5. A hazardous material spill plan will be developed and implemented with details on how each hazardous substance will be treated in case of leaks or spills.
6. Pesticide use will follow the guidelines for California condors as described in the April 2007 Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service

We concur with your “may affect, not likely to adversely affect” determination for endangered California condor (*Gymnogyps californianus*) outside of the 10j experimental nonessential population area, and your “is not likely to jeopardize” determination for the condor within the 10j experimental nonessential population area. We base this concurrence on the following:

- Implementation of the conservation measures, and the lack of condor use of the action area, should reduce the potential for disturbance of, and adverse interaction with, condors.

## APPENDIX B – TECHNICAL ASSISTANCE

This appendix contains recommendations to the Forest Service to reduce the likelihood of take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) from the development and operation of the identified rock pits.

The final rule to remove the bald eagle from the Federal List of Threatened and Endangered Species was published in the Federal Register on July 9, 2007, and took effect on August 8, 2007. However, bald and golden eagles continue to be protected by the Bald and Golden Eagle Protection Act (Eagle Act). The Eagle Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking eagles, including their parts, nests, or eggs. “Take” is defined under the Eagle Act as “to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” eagles. Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based upon the best scientific information available: (1) injury to an eagle; (2) a decrease in an eagle’s productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or, (3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior (USDI 2007).

FWS and the Forest Service jointly developed the following conservation measures to minimize impacts to bald and golden eagles in the project area. These measures are consistent with the strategies identified in the Conservation Assessment and Strategy for the Bald Eagle in Arizona (Driscoll et al 2006). We agree that implementation of the following measures will reduce the likelihood of take.

### Bald eagles

- No pit development or operation will occur in or adjacent to known bald eagle nests or roosts, or areas identified as important nest or roost habitat. The closest bald eagle nest is located two miles from a proposed rock pit.
- There are no major rivers or water bodies present within one mile of the proposed rock pit locations. Therefore, bald eagles using these areas for foraging should not be disturbed by the proposed action.
- None of the proposed rock pit sites are within a 300-foot radius of known bald eagle roosts. The project includes resource protection measures to avoid green tree removal from April 1 – August 30<sup>th</sup> to reduce potential impacts to eagles. However, if an eagle roost or nest is discovered in or adjacent to a pit, it will be protected with a 300-foot no cut zone around the roost or nest.
- There are no bald eagle nests adjacent to level 3 roads to be used for hauling; therefore, there will be no disturbance to eagles from hauling associated with the proposed action.

### Golden eagles

- The proposed rock pit sites do not provide suitable golden eagle nesting habitat, therefore no nesting habitat will be affected by the proposed action. The Double A Rock Pit is located approximately 0.4 mile from a golden eagle nest. The Double A Rock Pit is a cinder pit, which would not require activities such as blasting or processing, and would

mostly include sorting and loading of the cinders and transportation to and from the pit. Noise analysis conducted by the Forest Service found that the level of sound that would be detectable at the nest site from the proposed action would be similar to the sound level of a whisper to a babbling brook. Based on this analysis, the action should not result in noise disturbance to birds associated with this golden eagle nest.

- There are no golden eagle nests adjacent to level 3 roads to be used for hauling; therefore, there will be no disturbance to eagles from hauling associated with the proposed action.

#### **LITERATURE CITED FOR APPENDIX C**

Driscoll, J.T., K.V. Jacobsen, G.L. Beatty, J.S. Canaca, and J.G. Koloszar. 2006. Conservation assessment and strategy for the bald eagle in Arizona. Nongame and Endangered Wildlife Program Technical Report 173. Arizona Game and Fish Department, Phoenix, Arizona.

U.S. Department of the Interior (USDI), Fish and Wildlife Service. 2007. Protection of Eagles and Authorizations under the Bald and Golden Eagle Protection Act for Take of Eagles; Final Rule. Federal Register 72(107):31132-31140. June 5, 2007.

