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In Reply Refer To:
AESO/SE
02-21-04-F-0343

March 26, 2007

Memorandum

To: Superintendent, Grand Canyon National Park, Grand Canyon, Arizona

From: Field Supervisor

Subject: Biological Opinion for Hermit Road Rehabilitation in Grand Canyon National Park

This biological opinion responds to 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 October 6, 2006, request for formal consultation was received on October 7, 2006. At issue are impacts that may result from the proposed Hermit Road Rehabilitation project in Grand Canyon National Park (Park) located in Coconino County, Arizona, on the California condor (*Gymnogyps californianus*).

The October 6 letter also included a request for formal consultation for the Mexican spotted owl (MSO) (*Strix occidentalis lucida*) and a request for concurrence with a “not likely to adversely affect” determination for sentry milk vetch (*Astragalus cremnophylax* var. *cremnophylax*). During the course of the consultation, and as a result of review of the project and discussions with your staff, the determination of effect for the MSO was modified to “not likely to adversely affect.” Our concurrence with the determinations for the MSO and sentry milk vetch are provided in Appendix A.

This biological opinion is based on information provided in a September 2006 biological assessment, telephone conversations, meetings, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, road rehabilitation 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

Table 1. Consultation history for the Hermit Road rehabilitation project in Grand Canyon National Park.

<i>Date</i>	<i>Event</i>
June 2004	We received a request for a species list and comments on the proposed action.
July 29, 2004	We responded to the request with recommended conservation measures for the Mexican spotted owl, California condor, and sentry milk vetch.
July 2005	We received an update on alternatives development and an opportunity to provide additional information.
October 18, 2005	We met with the Park to discuss the proposal.
April 3, 2006	We met with the Park to discuss the status of the project and alternatives for the Maricopa Point component.
July 18, 2006	We received a request for comments on development options at Maricopa Point.
July 24, 2006	We responded with comments on development options.
October 7, 2006	We received a biological assessment and a request for formal consultation.
November 30, 2006	We met with the Park to discuss the proposed action.
February 7, 2007	We issued a draft biological opinion to the Park for review.
March 15, 2007	We received comments on the draft from the Park.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Most of the information regarding the proposed action in this document is from the September 2006 biological assessment (BA; Grand Canyon National Park 2006). Proposed improvements include: widening Hermit Road from its current width of 18-20 feet to a uniform width of 24 feet; realigning the road approximately six feet to the south in three locations between Mohave Point and the Abyss shuttle bus stop; constructing an approximately three-mile long greenway trail from the Abyss to Hermits Rest; improving the unpaved rim trail between Powell Point and the Abyss; rehabilitating the historic paved West Rim Trail between Grand Canyon Village and Maricopa Point; constructing a connecting trail around the Orphan Mine area between Maricopa Point and Powell Point; and improving safety and accessibility at ten overlooks and parking areas along Hermit Road.

Greenway Trail

The greenway trail along Hermit Road would be constructed along the historic 1912 road corridor beginning just west of The Abyss. A new outbound shuttle bus stop would be created there using an existing pullout near the location of the 1912 road intersection with Hermit Road, and an additional inbound shuttle bus stop would be added to the existing shuttle bus stop at Pima Point. The trail would be constructed adjacent to the access road into Pima Point, requiring widening of this 20-foot wide road approximately ten feet; two feet to accommodate wider travel lanes for buses and eight feet for the greenway. The trail would be paved and would be no greater than eight feet wide for most of its length. For the last approximately 0.33 mile to Hermits Rest, the trail would be narrowed to approximately five feet and would stay on the road's north side. The Park would also evaluate the feasibility of creating trail pull-off(s) or short spur trail(s) to scenic views along the greenway segment between the Abyss and Hermits Rest.

Paved Rim Trail (West Rim Trail) Rehabilitation

Improvements of the existing paved path include: removal and replacement of asphalt paving, replacement of missing or broken stones along trail edges, and re-setting of loose or misplaced stones. No new ground disturbance would occur and all improvements would be within the existing trail footprint.

Hermit Road Interchange

The existing shuttle bus shade shelter would either be removed and replaced or modified and increased in size. Concrete would be used to replace the existing asphalt on the loop. Buses would both load and unload on the north side adjacent to the existing loading area. The lane used for exiting onto Village Loop Drive would be slightly modified to accommodate wider turning radii for buses.

Overlook Improvements

Improvements would occur at: Trailview Overlook I, Trailview Overlook II, Maricopa Point, Powell Point, Hopi Point, Hopi Overlook, Mohave Point, The Abyss, Pima Point, and Hermits Rest. The majority of work would occur within existing footprints although some reductions or increases in pavement are proposed to facilitate circulation and parking. The modifications would result in approximately 0.5 acre of new ground disturbance. Additional modifications specific to Hopi Point, Hopi Overlook, and Maricopa Point are discussed below.

Potential improvements common to each overlook include: replacement of asphalt paving; raised walkways to facilitate shuttle bus loading/unloading; concrete braking pads for shuttle bus and/or tour buses; reconfiguration of select wall openings and/or paving; placement of trash/recycling receptacles; and, as needed, relocation or replacement of information waysides/kiosks and benches. Asphalt trails from the overlooks to viewpoints would be repaired and/or replaced in kind, and historic and modern rock trail liners would be repaired and stabilized.

Hopi Point would become both the inbound and outbound shuttle stop and would replace Hopi Overlook as the primary shuttle bus stop for this area. The result of these changes would be a one-way loop for buses with both an inbound and outbound bus stop. The only changes proposed for Hopi Overlook would be the replacement of the asphalt surface.

Maricopa Point Area

At Maricopa Point, work will be done to enhance the protection of a sentry milk vetch population and adjacent suitable habitat, and to improve visitor experience. The parking area and access-road pavement would be removed and the overlook would no longer be accessible by tour bus or private vehicle. The pedestrian path to Maricopa Point would be re-designed and improved to a more direct trail. A new shuttle bus stop would be created near the end of the existing Maricopa Point access road, connecting to the re-designed pedestrian path to the point. The shuttle stop would be a pull-out only, with enough room for a shuttle bus to pull-in, drop off visitors, and pull-out on to Hermit Road west-bound. Shuttle buses would access this new stop directly from Hermit Road using the existing pavement and flat ground at the access road's west end.

Other paved pathways in the area would be removed so that the paved trail to Maricopa Point would be visible. The connecting trail to Powell Point will be obvious to visitors at the shuttle stop. The existing rim trail east of Maricopa Point would be directed along the road edge in this area until it reaches the re-designed trail to Maricopa Point and the connecting trail leading to Powell Point. All areas currently denuded by social trailing would be revegetated. Visually appealing buffers (e.g., vegetation, rocks) between the re-designed trail to the point and the existing fence around the rare plant population would be created.

Asphalt Batch Plant

An existing disturbed area at the park dump site would be used for a diesel-powered asphalt batch plant. The park dump site is located between South Entrance Road and Center Road, approximately 0.25 mile west of the South Entrance Road near Grand Canyon Village. The approximately 5-8 acre previously disturbed site would be used for the plant itself, storing materials necessary for mixing asphalt, and the equipment needed to haul asphalt to the project site.

Salvage and Revegetation Plan Components

A detailed Salvage and Revegetation Plan is being developed. Salvaging existing vegetation would require the use of a backhoe and a small work crew. Crews would operate for a 1-3 week period in the project area, using a pick-up truck and small trailer to transport salvaged trees and shrubs to the park greenhouse or other suitable location for maintenance. The salvaged trees and shrubs would then be used in the project area following the completion of project activities to augment screening of the road and trail components and to revegetate areas with excessive social trailing. Following construction actions and full implementation of the project, watering of replanted vegetation, continued exotic species control, and monitoring of revegetation efforts would continue.

Trees, woody vegetation, and slash created during construction would be removed from the project area, and smaller material would be chipped. Larger material, such as usable poles, would be stockpiled in a suitable location in the park (such as at the dump site).

Construction Timing

Road construction would begin in 2008 and would take approximately one construction season to complete. Road construction would occur from west to east. Work would likely begin March or April and end in November, depending on weather conditions. Work on the eastern portion of the road would likely begin in June or July. Road rehabilitation and overlook improvements would occur at the same time and is factored into the timing estimates above. Proposed rehabilitation and improvements to the paved rim trail and the unpaved trail would also likely be done during the construction period. Greenway trail construction would occur during the road-construction period.

Visitation Changes and Operations

The existing shuttle buses with trailers that are used on the Hermits Rest route would be replaced by 40-foot compressed natural gas, low floor buses by 2008. No immediate changes in visitation are expected. Use of new buses that have slightly less capacity is expected to result in the addition of two or three shuttle buses. Private vehicles would continue to be restricted during nine months of the year, and allowed December-February when shuttle buses are not running.

The proposed improvements would result in approximately 53 acres of total disturbance. Approximately 15 of those acres would be new ground disturbance, requiring the removal of vegetation. The remaining disturbance would occur in previously disturbed areas.

Project Methods

Accomplishing the above will involve what the Park has characterized and defined as blasting, heavy construction, and light construction (Grand Canyon National Park 2002). Blasting may occur on the southwest side of a hill south of the Maricopa Point area. Blasting could occur for a few days at any time during the project. Contained blasting, which occurs underground and does not eject material from the blast site, is the most common type used in national parks. Typically, holes are drilled to the depth of the excavation, explosives are inserted to the proper depth, and a protective cover (blasting mat or earth fill) is placed over the blast area. This type of blasting usually results in a muffled roar and ground vibration.

Heavy construction would require the use of large equipment for actions such as moving earth and excavating rock. Earthmoving activities would require the use of heavy equipment such as large bulldozers, scrapers, and excavators for moving large amounts of soil and rocks. Rock excavating and trenching would require the use of heavy equipment such as hoe-rams, rock saws, hammer hoes, rippers on bulldozers, and large trackhoes with hydraulic hammers. The operation of the equipment necessary to excavate rock is very loud and can also result in vibration. The sound generated from the rock excavation itself can also be very loud. The heavy construction activity may occur at any time and location in the project.

Light construction would include activities such as trenching in dirt, concrete work, and trail construction. Equipment associated with light construction includes backhoes, small dump trucks, chainsaws, jackhammers, small bulldozers, bobcats, pavers, small base/soil compactors, punjars, and graders.

The Park is considering paving alternatives such as soil hardeners, soil cement, or other additives for the surface of the connecting trail between Maricopa Point and Powell Point and the greenway trail to provide a uniform surface and meet accessibility standards, while minimizing intrusions into the cultural landscapes.

Conservation Measures

The Park will implement several measures as part of the proposed project to reduce the potential for adverse effects (Grand Canyon National Park 2006). The measures that relate particularly to the California condor include:

- Prior to the start of a project component, the Park will contact personnel monitoring condor locations and movement to determine condor status in or near the project.
- Project workers and supervisors will be instructed to avoid interaction with condors and to contact the appropriate personnel immediately if and when condor(s) occur at a project site
- If a condor occurs at the project site, permitted personnel will employ techniques to cause the condor to leave the site as necessary. The particular project activity will temporarily cease if injury of a condor is imminent.
- Project sites will be cleaned up at the end of each work day (i.e., trash disposed of, scrap materials picked up) to minimize the likelihood of condors visiting the site. Park condor staff will complete a site visit to ensure adequate clean-up measures.
- To prevent water contamination and potential condor poisoning, the Park-approved vehicle fluid-leakage and spill plan will be adhered to. The plan will be reviewed by the Park biologist for adequacy in addressing condors.

STATUS OF THE SPECIES

The California condor was listed as endangered on March 11, 1967 (32 FR 4001). Critical habitat was designated in California on September 24, 1976 (41 FR 187). Critical habitat has not been designated outside of California. The California condor remains one of the world's rarest and most imperiled vertebrate species. Despite intensive conservation efforts, the wild California condor population declined steadily until 1987, when the last free-flying individual was captured. During the 1980s, captive condor flocks were established at the San Diego Wild Animal Park and the Los Angeles Zoo, and the first successful captive breeding was accomplished at the former facility in 1988. Following several years of increasingly successful captive breeding, captive-produced condors were first released back to the wild in California in early 1992 and in Arizona starting in 1996.

The first release of condors into the wild in northern Arizona occurred on December 12, 1996. They were released within a designated nonessential experimental population area in northern Arizona and southern Utah. The area is bounded by Interstate 40 on the south, U.S. Highway 191 on the east, Interstate 70 on the north, and Interstate 15 to U.S. Highway 93 on the west. The nonessential experimental population status applies to condors only when they are within the experimental population area. For the purposes of section 7 consultation, when condors are on lands not within the National Wildlife Refuge System or the National Park System, but within the experimental population area, they are treated as if proposed for listing. When condors are on National Wildlife Refuge or National Park System lands within the designated experimental population area, they are treated as a threatened species. Any condors outside of the experimental population area are fully protected as endangered.

Condors are scavengers and rely on finding their food visually, often by investigating the activity of ravens, coyotes, eagles, and other scavengers. Most California condor foraging in northern Arizona occurs in open areas and throughout the forested areas of the rims of Grand Canyon. Typical foraging behavior includes long-distance reconnaissance flights, lengthy circling flights over a carcass, and hours of waiting at a roost or on the ground near a carcass. Newly released individuals and young inexperienced juveniles may investigate human activity.

Roost sites include cliffs and tall trees, including snags. Nesting sites for California condors include various types of rock formations such as caves, crevices, overhung ledges, and potholes.

As of December 31, 2006, a total of 130 California condors existed in the wild, and what is known as the Southwest (Arizona) population of California condors contained 51 individuals. That latter figure includes 47 free-flying individuals previously released into the population, and four young produced in the wild. Thirty released birds and one young produced in the wild have died in northern Arizona since 1996. Most mortalities in northern Arizona have been related to human activity including shootings and lead poisoning.

ENVIRONMENTAL BASELINE

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

A. Status of the species within the action area

California condors in northern Arizona are fitted with radio transmitters that allow field biologists to monitor condor movements. Condors have been observed as far west as the Virgin River and west and south as Lake Havasu; south to the San Francisco Peaks outside of Flagstaff, Arizona; north to Zion and Bryce Canyon National Parks and beyond to Minersville, Utah; and east to Mesa Verde, Colorado, and the Four Corners region. Monitoring data indicate that condors are using habitat throughout Grand Canyon National Park, with concentration areas of

use in Marble Canyon, Desert View to the Village on the South Rim, and the Village to Hermits Rest (Grand Canyon National Park 2006).

Potential nesting habitat exists throughout the Park (Grand Canyon National Park 2006). One nesting attempt was documented in the Marble Canyon area in 2001. Two nest sites on the South Rim, one on The Battleship and one on Dana Butte, were initiated in 2002. Both nest sites failed. In 2003, one young was produced from the Salt Creek nest, but the Battleship nest failed. In 2004, nestlings were fledged from the Battleship nest and a nest on the Vermillion Cliffs. In 2005, the Salt Creek and Vermillion Cliffs nests were active again. A new nest in the King's Canyon area of the Kaibab National Forest failed. In 2006, all three nest attempts in northern Arizona failed. The area just east of Hopi Point to Mohave Point is within 0.5 mile of the Salt Creek nest site; this is an area of approximately one mile in length. At Hopi Point, the project comes as close as 0.40 mile to the nest site.

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

California condors may be affected by the special flight rules (overflights) that may overlap a portion of the project area. In the biological opinion (02-21-97-F-0085) developed for the special flight rules, we anticipated that an unquantifiable number of condors would be affected by the special flight rules. Incidental take was anticipated in the form of harassment or accidental displacement when startled individuals are flushed from a perch site by the proposed low-level flights. Additional incidental take in the form of killing, estimated at one bird in five years, was anticipated from collisions.

California condors may be affected by the GRCA fire-use program that could be conducted in a portion of the project area. In the biological opinion (02-21-02-F-0118) developed for the fire-use program, we anticipated that incidental take of up to one condor could occur due to interactions with humans on the ground, collision with aircraft, or inundation of a nest site by smoke.

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 project to condors are anticipated to be in two forms. Condors could be affected through their attraction to project sites where they could be involved in unintended human-condor interactions on the ground. The conservation measures developed by the Park will help in minimizing adverse effects that could arise from potential human-condor interaction on the ground.

Condors could also be affected by disturbance of their normal breeding behavior due to noise

and activity. The proposed action includes heavy construction (and one possible instance of blasting) that could occur at any time and in any location of the project area. The proposed action will overlap at least part of the condor breeding season (approximately February 1-September 30).

Condors have nested in the vicinity of the project area, and from Mohave Point to Hopi Point the Salt Creek nest site is within 0.5 mile of the proposed action. At Hopi Point, the project is closer than 0.4 mile to the Salt Creek nest site. It is possible that condors could attempt to use the Salt Creek nest site during project implementation.

More important is the possibility that one or more pairs of condors could choose nest sites very close to the project area. The proposed action is on the edge of the South Rim of the Grand Canyon. It is possible that condors could select a nest site as close to the project as just below the rim. Furthermore, condors could choose a nest site very close to the project prior to the implementation of project activities that could cause disturbance. Implementation of those disturbance events after condors have committed to a site would compound the potential disturbance effects.

Due to the impracticality of modifying or stopping an in-progress large road construction project if new condor information becomes available, the Park was not able to develop or commit to such measures. Thus, it is possible that disturbance of normal condor breeding could occur at any time or location within the project area during implementation of the project.

The sensitivity of condor reproductive behavior to human activity and noise is unknown. The nesting attempts by condors in northern Arizona have occurred primarily in locations somewhat remote from human activity. The reasons for that pattern are unknown, and it is not known if the pattern will persist. However, condor reproductive efforts in northern Arizona have been fragile, and the ratio of successful attempts to all attempts is relatively low. If overlap of condor nesting and disturbance events occurred, it is possible that normal condor breeding behavior could be affected. It is possible that disturbance through activity and noise could adversely affect several aspects of condor breeding including pair formation, nest site investigation and selection, foraging during breeding, and nest attendance.

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.

The action area occurs entirely on Federal land, and therefore non-Federal actions are likely to be minimal. Private actions that are likely to occur within the action area include various forms of recreation such as sightseeing, hiking, and biking, but all are authorized by Grand Canyon National Park.

CONCLUSION

After reviewing the current status of the California condor, the environmental baseline for the action area, the effects of the proposed project in Grand Canyon National Park and the cumulative effects, it is our biological opinion that the Hermit Road Rehabilitation Project in Grand Canyon National Park, as proposed, is not likely to jeopardize the continued existence of the California condor.

We present this conclusion for the following reasons:

1. Only a few condors are likely to be adversely affected by the proposed action.
2. The proposed action is of limited scope and duration.

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 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 (50 CFR 17.3). "Harass" is defined 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 (50 CFR 17.3). "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

Given the uncertainty of where condors may nest in 2008, we cannot anticipate that the proposed action will result in incidental take of any California condors.

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 West Broadway Road, 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.

We have not identified any conservation recommendations.

REINITIATION NOTICE

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

We appreciate Grand Canyon National Park's efforts to identify and minimize effects to listed species from this project. For further information, please contact Bill Austin (928) 226-0614 (x102) or Brenda Smith (x101). Please refer to the consultation number, 02-21-04-F-0343, in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Director, Science Center, Grand Canyon National Park, Grand Canyon AZ

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

LITERATURE CITED

Grand Canyon National Park. 2002. Biological assessment of the parkwide construction program. Grand Canyon National Park. Grand Canyon, Arizona. 56 pp.

Grand Canyon National Park. 2006. Biological assessment of the Hermit Road rehabilitation project. Grand Canyon National Park. Grand Canyon, Arizona. 27 pp.

APPENDIX A - CONCURRENCE

This appendix contains our concurrence with your determination that the proposed action may affect, but is not likely to adversely affect, the MSO and sentry milk vetch.

MSO (*Strix occidentalis lucida*)

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the MSO. We base this concurrence on the following:

- 1) Possible adverse effects to the MSO would be disturbance of normal behavior only; no MSO habitat or critical habitat would be affected. Adverse effects would not be significant.
- 2) Surveys for MSO have been conducted to protocol and are up-to-date. Two MSO Protected Activity Centers (PACs) are in the project area.
- 3) The known nest area and primary roost sites of the Bright Angel PAC are more than 0.5 mile from the project. Blasting that may be part of the proposed action is at least one mile from the MSO nest area. The owls occupying the PAC have been reproductively successful over the last several years. The nest area is a short distance from a trail and recreation site with high levels of human visitation.
- 4) MSO were first detected in the Hermit MSO PAC in 2002, and the Park believes the PAC was “active” only in 2003. Since then, follow-ups to detect owls in the PAC have been conducted from the rim in 2004, 2005, and 2006 with no response from owls. Although no roost or nest sites are known, the predicted MSO canyon habitat in the PAC is more than 0.5 mile from the project.

Sentry milk vetch (*Astragalus cremnophylax* var. *cremnophylax*)

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the sentry milk vetch. We base this concurrence on the following:

- 1) Surveys for the species were conducted in 2005 along the rim north of Hermit Road and no additional individuals were detected.
- 2) As a result of the surveys, potential suitable habitat for the species was identified in three other areas along Hermit Road. Occupied and potential habitat will be avoided.
- 3) The proposed action may benefit the species due to the movement of recreational activity away from the known population and the possibility of eventual long-term recovery of habitat in the vicinity of the known population.