



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES FIELD OFFICE
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2-21-89-F-170

February 2, 1993

MEMORANDUM

To: Regional Environmental Officer, Bureau of Reclamation, Lower
Colorado Regional Office, Boulder City, Nevada

From: Field Supervisor

Subject: Biological Opinion for the Colorado Bridge Crossing - Hoover Dam
Project

This Biological Opinion (BO) responds to your request dated November 5, 1992, for initiation of formal consultation with the Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended. The action under consultation is the Bureau of Reclamation (BR) construction of a bridge and its associated approach roads and interrelated infrastructure. The Mojave population of the desert tortoise (*Gopherus agassizii*), a federally listed threatened species, may be impacted by your action. We concur with the determination that the Sugarloaf Alternative of the Colorado River Bridge Crossing Project will most likely not affect the endangered peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), bonytail chub (*Gila elegans*), razorback sucker (*Xyrauchen texanus*) or the Devil's Hole pupfish (*Cyprinodon diabolis*). The 90-day consultation period began on November 9, 1992 the day your request for initiation was received by our office.

This BO was prepared using information contained in your request for formal section 7 consultation dated November 5, 1993; a biological assessment dated November 3, 1993 (BR 1993); information in our files; field trips; and conversations with your staff.

BIOLOGICAL OPINION

It is our biological opinion that the proposed Sugarloaf Alternative of the Colorado River Bridge Crossing Project is not likely to jeopardize the continued existence of the threatened Mojave population of the desert tortoise. Critical habitat was designated for the Beaver Dam Slope subpopulation in Utah in 1980 but not for the subpopulations in Arizona, California, and Nevada. Therefore, no critical habitat will be destroyed or adversely modified by those activities.

DESCRIPTION OF THE PROPOSED ACTION

The BR is seeking a permanent solution to the high volume of vehicular traffic now using U.S. Highway 93 across Hoover Dam and the Colorado River on the Nevada/Arizona border (Figure 1). When the dam was constructed in 1935, there was very little traffic. During 1990, an average of 8,204 vehicles per day crossed the dam. The hazard to public safety has increased dramatically. During 1989, there were 50 accidents in the project area, 22 involved semi-tractor trailers. A serious environmental accident could occur if a truck containing volatile fuel, chemicals, or hazardous waste lost its load on the top of the dam and the material entered Lake Mead or the Colorado River. Public Law 98-381, dated August 17, 1984, authorized the Secretary of the Interior to construct a Colorado River bridge crossing, including suitable approach spans, immediately downstream from Hoover Dam for the purposes of alleviating traffic congestion and reducing safety hazards.

The proposed action is the construction of a bridge crossing the Colorado River approximately 1,500 feet downstream of Hoover Dam. The Sugarloaf Alternative was selected for the proposed action. The action would require the constructing about 2.2 miles of highway approach in Nevada, a 1,900-foot bridge, and approximately 1.1 miles of highway approach in Arizona. Construction time is estimated to be five to six years.

Highway Approach Construction

In Nevada the new approach would leave the existing highway about 1,000 feet east of the Goldstrike Casino (Figure 2). The new highway would be located immediately south of existing U.S. Highway 93 until it reaches the BR warehouse area. It would then make a sweeping turn to head directly southeast toward the Colorado River. The new road would cross the existing BR service road before joining existing U.S. Highway 93 for approximately 1,300 feet. In this section, a frontage road would need to be constructed along the south side of the new highway. This frontage road would provide access to the dam by passing beneath the new highway, thus allowing the existing highway to continue to function as the dam access road.

From the warehouse area, the grade steepens slightly to approximately three percent as the road would pass through a gap in the high rock ridge that parallels the river and then would descend to the long-span bridge over the river. On the Arizona side of the bridge, the approach road would transverse an area of deep through-cut along the north slope of Sugarloaf Mountain. This segment of new highway would then pass through an area containing two existing sewage evaporation ponds that would need to be relocated. Past the sewage ponds the highway would turn more southerly, crossing a wide ravine at a six percent grade, and intersecting existing U.S. Highway 93 (Figure 2).

Other features

On the Nevada approach a bridge, approximately 400 feet long, would cross a bend in Goldstrike Canyon to eliminate constructing a large fill area. The fill would have extended down into the canyon, completely covering the bottom of the wash throughout the bend. The bridge would keep the bottom of the canyon unchanged for drainage flows, would preserve access to the canyon, and would provide a large opening for wildlife to cross beneath the new highway.

On the Nevada approach, a 300-foot-long tunnel is proposed that would pass through a high, narrow ridge that separates the Goldstrike Canyon from the open valley to the northeast. Using this tunnel would keep upland terrain intact for wildlife crossing, would avoid having to relocate the transmission tower on the above ridge, and would result in no excess excavated material on the Nevada highway approach.

A highway bridge approximately 800 feet long, would cross a large ravine on the Arizona approach. This bridge would allow existing drainage flows and wildlife movements in the ravine to continue crossing beneath the new highway.

Preliminary engineering estimates indicate that balance of cut and fill would occur on both highway approaches, eliminating the need to dispose of excess excavated material.

No major detours, closures, or traffic delays are expected to occur during construction of the river bridge and highway approaches. The existing highway could remain open with minimal interference, except during construction at the beginning and ending locations of the project. Specifications would provide for maintaining two lanes of traffic during construction.

The approaches would include four wildlife underpasses, three wildlife overpasses, two highway bridges (which would also function as wildlife underpasses), and one tunnel (which would also function as wildlife overpass). Continuous fencing would be placed along both side of the highway to guide wildlife to the crossing structures. Fencing would continue approximately 3,300 feet beyond the intersections of the new highway with existing U.S. Highway 93. Out-jumps would be strategically located to provide means of escape for any bighorn sheep that accidentally get inside the fenced highway right-of-way area.

The following measures would be undertaken to minimize the effects of the proposed action to the desert tortoise:

Qualified desert tortoise biologists would conduct preconstruction surveys on the exact highway routes according to current survey methods established by the Service, Nevada Department of Wildlife, and the Arizona Game and Fish Department.

To compensate for habitat lost, BR would contribute to a section 7 desert tortoise conservation fund.

Any tortoises found in the construction right-of-way would be moved according to protocol prescribed by the Service.

A qualified tortoise biologist would be available for the handling of tortoises found during construction

The BR would ensure that construction workers are briefed on tortoise activity patterns, tortoise sensitivity to human disturbance, and proper handling for removal from roadways.

Measures would be taken to prevent road kills in areas with high tortoise densities and where tortoise movements would be likely. These

measures would be designed and implemented from specifications provided from Nevada, Arizona, and California Departments of Transportation.

SPECIES ACCOUNT AND ENVIRONMENTAL BASELINE

On August 4, 1989, the Service published an emergency rule (FWS 1989) that afforded endangered status to the Mojave population of the desert tortoise. Subsequently, on April 2, 1990, the Mojave population of desert tortoises was listed as threatened throughout its range north and west of the Colorado River (FWS 1990). Critical habitat has not been designated in either Arizona nor Nevada.

Although the Mojave population of desert tortoises is widely distributed, the range of the population has been fragmented and tortoise numbers have declined (Berry 1978, Berry 1989). Desert tortoise population declines have been attributed to the encroachment of human activities (Berry 1978, Berry 1989). These activities include collecting, motor vehicle mortality, off-highway vehicle (OHV) mortality, and shooting. Habitat loss by development, road construction, powerlines, pipelines, agricultural practices, mineral extraction, and other human activities, reduces tortoise numbers. Habitat modification by grazing, or other modification of native vegetative communities and terrain morphology, has caused population declines (Berry 1978, Berry 1989). Further information on the range, biology, ecology, and population status of the desert tortoise can be found in Berry (1984), Duck and Snider (1988), Hohman and Ohmart (1980), Karl (1983), Luckenbach (1982), and Weinstein et al. (1987).

The project area is within the Black Canyon of the Colorado River which is characterized by precipitous rocky terrain and rolling hills dissected by desert washes. Plant communities and associated wildlife are typical for the Eastern Mojave Desert biome, characterized by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Precipitation averages 8 to 12 inches per year in the form of rain. Within the adjacent areas of Lake Mead National Recreation Area, the occurrence of plant and vertebrate animal species have been documented by Niles et al. (1977). Low density populations of desert tortoises are known to occur adjacent to the project area in the Black Mountains, the Eldorado Mountains, and the Eldorado Valley (Rorabaugh and Allen 1990, and Schwartz et al. 1978). The project area encompasses portions of the threatened Mojave desert tortoise population (Nevada) and the non-listed Sonoran desert tortoise population (Arizona).

Mojave population desert tortoises typically inhabit creosote-burrobush or creosote-yucca vegetation types. Mojave population tortoises prefer bajadas and desert washes where soils range from sandy-loam to light gravel-clay which are optimal for burrow construction. Sonoran population tortoises are found on some steep rocky slopes of mountain ranges, primarily in Arizona uplands vegetation dominated by palo verde and saguaro cactus. However, the populations on both sides of the river in the Black Mountains are apparently more similar to the Mojave populations which typically inhabit less steep areas. The Black Mountains in Arizona are vegetatively similar to mountains of the Mojave Desert (Bureau of Land Management 1988). Thus, the low density population found in the project areas is probably a function of low habitat suitability and could be rated as marginal. Due to the steep, rocky nature of

the project area and the degree of existing disturbance, the area probably could never support more than low density populations.

A "Distribution and Abundance Survey" was conducted by Rorabaugh and Allen (1990) during April and May of 1990 per the "preliminary survey protocol" established by the Reno Field Office of the Service. A relatively small amount of tortoise sign was found on the Nevada and Arizona sides of the Goldstrike Canyon and Promontory Point alignments. During 43 transects totaling 93,450 feet (17.7 miles), four corrected sign, consisting of 5 scat, were encountered. No tortoises or tortoise remains were encountered during the survey. To summarize the survey results, the 0.68 corrected sign per three miles of transect is low compared to other similar studies and likely corresponds to low tortoise densities. For further information on desert tortoise populations at the project site refer to Desert Tortoise Occurrence: Proposed Highway 93-466 Hoover Dam Bypass Routes (Rorabaugh and Allen 1990).

EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

Much of the land within the proposed project area and its zone of influence has been disturbed by Hoover Dam construction and its operational features. Approximately 79 percent of the proposed right-of-way has been previously disturbed. The proposed construction along the existing road alignment will affect primarily disturbed, unoccupied habitat. Therefore, the proposed action is not expected to reduce habitat quality or quantity in areas of previous disturbance. However, in other areas that have received less historic impact, some adverse impact to desert tortoises and/or desert tortoise habitat may occur. Since some areas adjacent to the proposed alignment are relatively undisturbed desert tortoise habitat, tortoises may wander into the project area during construction.

Construction of the proposed roadway alignments would result in impacts to approximately 80 acres of creosote-bursage plant community. The alignment does not transverse nearby seep wetland and riparian areas and measures would be taken to protect these areas from indirect impacts of construction.

The width of the construction right-of-way would average 300 feet. Roughly half of this area would be out of the roadway and would be restored if impacted. Temporary disturbance would result from heavy equipment operation and blasting.

The construction of the new highway may affect Mojave population desert tortoises through habitat loss and/or direct mortality. During and after construction the opportunity exists for tortoises to be impacted by vehicles or equipment. A BR estimate indicated that five Mojave desert tortoises may be affected by construction.

In addition to construction related impacts and loss of habitat, there could be mortality associated with road kills along the new highway. After construction is completed, the more efficient nature of the bridge and highway could allow vehicles to travel at higher rates of speed. An increased braking distance resulting from higher attainable automobile speeds could result in increased tortoise deaths from vehicular crushing.

The proposed action will not isolate desert tortoise populations.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future non-federal (State, local government, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur in the foreseeable future. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

Outdoor recreational activities, which may increase with an increased human population, have the potential to impact adversely desert tortoise habitat in the area. Off-road vehicle use occurs in the area. Off-road vehicles can kill tortoises on the surface or in burrows, damage their burrows and nests; damage vegetation used by the tortoise for cover or food; and compact the soil and inhibit the germination of plants used by the tortoises. Soil compaction may also interfere with tortoises being able to dig burrows.

Recreational target shooting occurs in the area and could harm desert tortoises. Other general recreational use, including camping, picnicking, sightseeing, hiking, bird watching, horse riding, and rock and mineral collecting can result in desert tortoise habitat destruction. Other human impacts associated with increased development include take of desert tortoises for pets, vandalism, and fire.

INCIDENTAL TAKE

Sections 4(d) and 9 of the Act, prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to, and not intended as part of the agency action, is not considered a prohibited taking provided that such taking is in compliance with this incidental take statement. The measures described below are nondiscretionary and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.

The Service anticipates that the following take could occur as a result of the activities associated with the proposed project over the next 100 years. The level of take is based on the analysis of impacts provided above, results of tortoise surveys, the protective and mitigative measures offered by BR, and the duration of the project.

1. A maximum of 80 acres of Mojave desert tortoise habitat are anticipated to be destroyed and, therefore, taken during construction of the Sugarloaf Alternative of the Colorado River Bridge Crossing project.

2. Five Mojave tortoises are anticipated to be taken in the form of direct mortality through accidental death during construction/rehabilitation activities.
3. Five tortoises are anticipated to be taken in the form of harassment through the removal of tortoises from harm's way during construction/rehabilitation activities.
4. An undeterminable number of shelter sites, nests, and eggs are anticipated to be taken during construction/rehabilitation activities.
5. Two tortoises per year are anticipated to be taken in the form of direct mortality from vehicles associated with the bridge and approach highway.
6. An unknown number of tortoises are anticipated to be taken in the form of indirect mortality through predation by ravens or coyotes by trash at the project site resulting from project related operations.
7. An unquantifiable number of tortoises are anticipated to be taken indirectly in the form of harm through fragmentation of habitat and increased noise associated with operation of construction equipment and motor vehicles.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take authorized by this Biological Opinion.

1. Measures will be taken to minimize mortality or harm to tortoises by any activity during construction or operation of the proposed project.
2. Measures will be taken to minimize habitat disturbance due to project-related activities.
3. Measures will be taken to minimize predation of desert tortoises by ravens or coyotes drawn to the project site during construction and operation of the proposed project.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the BR must ensure the compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement reasonable and prudent measure number 1, the following terms and conditions shall be implemented.
 - a. Construction projects generally have a greater negative effect on individual tortoises during the active period and construction

related desert tortoise mortality is reported to be less during periods of estivation and hibernation. The Service considers the period between March 1 and November 1 to be the desert tortoise activity period. During the tortoise active period, the construction right-of-way shall be inspected for tortoises and their burrows not more than three working days prior to any surface disturbing activities. The inspection shall be conducted by a qualified tortoise biologist and shall provide 100 percent coverage of the right-of-way.

During clearance surveys, if tortoises are encountered within harm's way, they shall be removed from danger. Tortoises and eggs removed from the project area will be relocated to undisturbed habitat within 1000 feet of the collection site, well away from the project area. Tortoises removed from the project will be placed in the shade of a shrub or in an unoccupied burrow similar to the one where it was found, or in an artificially constructed burrow following the protocol provided in Appendix A. Tortoises shall be purposefully moved only by qualified tortoise biologists, solely for the purpose of moving them from harm. The definition of "take" includes capture. Therefore, any unauthorized person who removes a tortoise from the site could violate section 9 of the Act.

- b. If any tortoises are found within construction areas after the initial removal of tortoises, all activity will cease until the tortoise moves from potential harm of its own volition or a qualified biologist can move it safely. Tortoises shall be moved in accordance with Term and Condition 1.a.
- c. Construction and maintenance personnel working in desert tortoise habitat will be informed that desert tortoises may occur in the right-of-way and requested to refrain from harming or harassing them.
- d. Tortoise burrows within or just outside of the right-of-way that can be avoided during construction activities shall be clearly marked to prevent crushing during construction.
- e. The area around and underneath every vehicle or piece of equipment shall be inspected for tortoises before being moved. Tortoises shall be moved in accordance with Terms and Conditions 1.a. and 1.b.
- f. Following construction, all areas requiring maintenance shall be inspected for tortoises by a qualified tortoise biologist not more than one working day prior to the initiation of the work. Any tortoises located shall be removed in accordance with Terms and Conditions 1.a. and 1.b.
- g. Alternatively to Term and Condition 1.a. above, a temporary or permanent tortoise barrier may be installed around the perimeter of the project area prior to the onset of any construction activities. Following the installation of the tortoise-proof barrier, a qualified tortoise biologist shall thoroughly search all areas inside the barrier for tortoises, using techniques providing 100

REPORTING REQUIREMENTS

Upon locating dead, injured, or sick Mojave desert tortoises, initial notification must be made to the Service's Division of Law Enforcement, Special Agent, Edward Dominguez, Las Vegas (Telephone: 702/388-6380). Instructions for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement consistent with the provisions of this incidental take statement. Care must be taken when handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. All tortoise remains will be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions.

Prior to construction, the BR will make arrangements with the institution regarding proper disposition of potential museum specimens. Should no institutions want the tortoise specimens, the remains may be disposed of in any appropriate manner. In conjunction with the care of sick or injured tortoises, or the preservation of biological materials from a dead tortoise, the BR has the responsibility to ensure that information relative to the date, time and location of the tortoise when found, and possible cause of injury or death of each tortoise is recorded and provided to the Service. Should injured animals be treated by a veterinarian and survive, the Service should be contacted regarding final disposition of these tortoises. The Service contact person is Jay Slack, Arizona Ecological Services Office, Phoenix, Arizona (Telephone: 602/379-4720).

The BR will notify this office of all tortoises killed, injured, or removed from the project area within 3 days of each occurrence. The BR will submit annual reports (each calendar year) to the Service concerning all tortoise-related activities undertaken in association with this project. Within 30 days after the completion of the project, the BR will provide the Service with a report detailing all tortoise-related activities undertaken in association with this project, including tortoise biologist activities, actual number of tortoises injured, killed, or moved, and effectiveness of the terms and conditions provided in this Biological Opinion.

If, during the course of the action, the amount or extent of the incidental take limit is exceeded, the BR shall immediately notify the Service in writing. If the incidental take limit is exceeded, to avoid violation of section 9 of the Act, the BR must immediately cease the activity resulting in the take and reinitiate consultation with the Service. Operations must be stopped in the interim period between initiation and completion of the new consultation if it is determined by the Service that the impact of the additional take will cause an irreversible and adverse impact on the species. The BR should provide an explanation for the causes of the additional take.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as the Service's suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, critical habitat, or regarding

development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibilities for the species.

The BR should initiate a monitoring program designed to determine the effects of the project on the local tortoise population.

For the Service to be kept informed of actions that either minimize or avoid adverse effects, or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation on the Sugarloaf Alternative of the Colorado River Bridge Crossing in Clark County, Nevada and Mohave County, Arizona as outlined in your November 5, 1992, request. As required by 50 CFR § 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may impact 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 a listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. We would appreciate notification of your final decision on this action.

CANDIDATE SPECIES

For BR to fulfill the intent of the proposed action by compensating for the loss of Sonoran desert tortoise habitat, the Service suggests the following conservation recommendation:

The BR should transfer \$5,000 into an account administered by the Bureau of Land Management, Shivwitz Resource Area for mitigation for the destruction of Sonoran tortoise habitat within the project boundaries. The mitigation rate is based \$125 per acre of habitat for 40 acres of long term disturbance of habitat. This rate was determined by the compensation formula developed by the Desert Tortoise Compensation Team (1991). These funds should be directly deposited into BLM's desert tortoise compensation fund number AZ-010-7122-5442 administered by BLM for the purpose of securing tortoise management areas, habitat enhancement, and tortoise research. Proposed expenditures should be approved by the Service.

Total payments should be made prior to construction initiation. Payment, if made directly, should be by certified check or money order payable to Bureau of Land Management, AZ-010-7122-5442, and delivered to:

Area Manager
Shivwits Resource Area
225 N. Bluff Street
St. George, Utah 84770

We appreciate the assistance and cooperation of your staff throughout this consultation process. In future written communication, please reference our file number 2-21-89-F-170. If we may be of further assistance, please contact Jay Slack or me.



Sam F. Spiller

cc: Director, Arizona Game and Fish Department, Phoenix, Arizona
Director, Nevada Department of Wildlife, Reno Nevada
State Director, Bureau of Land Management, Phoenix, Arizona
Superintendent, Lake Mead National Recreation Area, Boulder City, Nevada
Regional Director, Fish and Wildlife, Albuquerque, New Mexico (AES)
Senior Resident Agent, Division of Law Enforcement, Fish and Wildlife
Service, Reno, Nevada
Field Supervisor, Fish and Wildlife Service, Reno, Nevada
Field Supervisor, Fish and Wildlife Service, Salt Lake City, Utah
Field Supervisor, Fish and Wildlife Service, Ventura, California

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Appendix A

Procedures for
Endangered Species Act Compliance for
the Mojave Desert Tortoise