

## **Appendix D Impairment Determination**



**Impairment Determination  
Boulder City / U.S. 93 Corridor Study  
Lake Mead National Recreation Area**

This document summarizes and analyzes the findings of the Environmental Impact Statement for the Boulder City Bypass Project and determines if there are any resources that could be impaired as a result of the proposed action.

The NPS Organic Act directs the NPS to manage units "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such a manner as will leave them unimpaired for the enjoyment of future generations." (16 U.S.C. § 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress." (16 U.S.C. § 1 a-1.). The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts. An action constitutes an impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources and values." (Management Policies 1.4.3).

NPS Management Policies (2001) requires the analysis of potential effects of each alternative to determine if actions would impair park resources. To determine impairment, the NPS must evaluate "the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts." (Management Policies 1.4.4). The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the affected resources and values (Management Policies 1.4.3).

NPS units vary based on their enabling legislation, natural and cultural resources, missions, and the recreational opportunities appropriate for each unit, or for areas within each unit. An action appropriate at Lake Mead NRA as designated by the enabling legislation may impair resources in another unit.

Nevertheless, the NPS cannot allow any activity in a park if it would involve or result in:

1. Inconsistency with the park's enabling legislation or proclamation, or derogation of the values or purposes for which the park was established.
2. Unacceptable impacts on visitor enjoyment due to interference or conflict with other visitor use activities
3. Consumptive use of park resources
4. Unacceptable impacts on park resources or natural processes
5. Unacceptable levels of danger to the welfare or safety of the public.

The determination of impairment is closely tied to the outcome of the resource impact analysis in the environmental impact statement. This determination is also made with a parallel consideration of the park's legislative mandates (purpose and significance), and resource management objectives as defined in the park's *General Management Plan*, *Strategic Management Plan*, and *Resource Management Plan*.

Within the Environmental Impact Statement for the Boulder City Bypass, nine impact topics were analyzed under the four alternatives.

The following table summarizes the impacts on park resources from all the alternatives.

U.S.93/Boulder City Corridor Study

Park Resource	Impact Level by Alternative				Impairment		Discussion
	A	B	C	D	Potential		
Air Quality	Minor	Minor	Minor	Moderate	No	No	<ul style="list-style-type: none"> <li>Impacts during construction could be mitigated with dust control and best management practices</li> <li>Vehicle emissions would increase as the grade has increased to 6% within the park under Alt. D</li> <li>Emissions would not exceed State Class II standards</li> <li>Stormwater runoff mitigation</li> </ul>
Water Quality	None	Minor	Minor	Minor	No	No	<ul style="list-style-type: none"> <li>Floodplain mitigation is already in place in Hemenway Wash</li> <li>While there are floodplain impacts occurring within the park from the current floodplain mitigation, this project does not offer the opportunity to address that issue</li> </ul>
Floodplains	None	Minor	Minor	Minor	No	No	<ul style="list-style-type: none"> <li>Project area is included the Park's Natural Zone - does not include special area or resource zoning</li> <li>The general project area currently contains transmission lines and service roads - a new transmission line was constructed in this corridor in 2001</li> </ul>
Land Use	None	Moderate	Moderate	Major	No	No	<ul style="list-style-type: none"> <li>45-acres of park land would be required under Alts. B and C</li> <li>85-acres of park land would be required under Alt. D</li> <li>The existing road corridor would be maintained under Alt. D. so land use impacts are cumulative</li> </ul>
Biological Bighorn Sheep/ Desert Tortoise Habitat	Minor	Moderate	Moderate	Major	No	No	<ul style="list-style-type: none"> <li>All build Alts. would impact wildlife habitat (45 - 85 acres)</li> <li>Sheep collisions with vehicles are occurring today</li> <li>All build alternatives would add to the difficulty in sheep movement within the northern Eldorado Mountains</li> <li>Bighorn sheep habitat fragmentation may result in the loss of habitat on the north side of the new alignment</li> <li>May be able to mitigate with dedicated sheep crossings</li> <li>Desert tortoise habitat would be impacted</li> <li>Desert tortoise mitigation measures would be incorporated</li> </ul>

Park Resource	Impact Level by Alternative				Impairment Potential	Discussion
	A	B	C	D		
Ethnographic Resources	Minor pending consult	Minor pending consultation	Minor pending consultation	Minor pending consultation	Not Determined	<ul style="list-style-type: none"> <li>Based on information provided NDOT - The SHPO has approved the consultation effort to date - would require specific consultation on the Sullivan Turquoise Mine - outcome of consultation on this property is unknown</li> <li>The Sullivan Turquoise Mine is located within Lake Mead NRA near the head of Goldstrike Canyon - a recently nominated TCP</li> </ul>
Noise/Soundscape	Minor	Minor	Minor	Moderate to Major	Not Determined	<ul style="list-style-type: none"> <li>Vehicles climbing and braking on the 6% grade would result in additional noise over existing conditions or Alts. B and C</li> <li>The primary visitor use facility in the area is the Alan Bible Visitor Center where highway noise is currently present - noise levels are not anticipated to increase at the Alan Bible Visitor Center over existing situation</li> <li>"Alt. D would result in substantive increases over existing background noise levels - areas within a distance of 550-feet from the highway would experience substantial noise level increases"(Page 4-11).</li> <li>NPS does not concur with operational finding that mitigation is not required in areas "not deemed to be of frequent human use".</li> <li>Mitigation may be required</li> </ul>
Visual Resources	Minor	Moderate	Moderate	Major	No	<ul style="list-style-type: none"> <li>All build alternatives would require disturbance of additional park land</li> <li>Alts. B and C are proximal to the existing corridor</li> <li>Alt. D requires a 250-foot vertical cut in the mountainous ridge - this ridge is located outside the park but visible from Lake Mead NRA</li> <li>Mitigation could reduce visual impact through staining areas of high contrast</li> </ul>
Social Setting	Minor	Minor	Minor	Minor	No	<ul style="list-style-type: none"> <li>Project would improve the interstate traffic flow within Lake Mead NRA</li> <li>Intersection of Lakeshore and US93 would be improved by reducing traffic volume</li> </ul>

Only the three action alternatives will be evaluated for the potential to impair park resources, including the National Park Service preferred alternatives (Alternative B or C), and the locally preferred alternative (Alternative D). The discussion will focus on impacts to park lands only.

Within alternatives B and C, six impact topics were found to have minor impacts on park resources, and three impact topics were found to have moderate impacts on park resources. Since no major impacts to park resources would occur as a result of implementing either alternative B or C, there is no potential for impairment.

If alternative D is implemented, major impacts would occur to biological resources, including bighorn sheep and desert tortoise habitat, land use, soundscape, air quality and ethnography. The impairment determination will focus on these impact topics. All other impact topics were considered to have negligible to moderate impacts as a result of the implementation of alternative D, therefore, there is no potential for impairment. (This finding is, in part, based on information provided by NDOT that the SHPO has approved the consultation effort.)

#### Biological Resources

All the build alternatives would impact wildlife habitat. Alternative D would impact 85 acres of wildlife habitat, the most of any alternatives. The primary wildlife species of concern in this area, as identified through the planning process, are desert bighorn sheep, desert tortoise, chuckwalla, gila monster, various birds, and small mammals. Major impacts would occur to desert bighorn sheep and desert tortoise as a result of implementing alternative D, therefore, these species will be the focal point of the impairment analysis. Mitigation adopted for the protection of bighorn sheep and desert tortoise would subsequently protect the other wildlife species in the proposed project area.

All the build alternatives would add impediments to sheep movement within the Eldorado Mountains. The Nevada Division of Wildlife considers the Eldorado Mountains a core use area for sheep. Alternative D would result in major impacts to bighorn sheep habitat because of habitat fragmentation due to the construction of a major highway corridor in relatively undisturbed areas. There are some portions of the proposed project area that have been previously disturbed by a powerline corridor and existing approved road. The low level of disturbance and traffic however has probably not had significant impact. Implementing alternative D would further alter the existing ecological setting, possibly disrupting sheep movement corridors and patterns. There is a high probability that this area holds suitable lambing areas, which could be encroached upon by this alternative. There could also be an increase in direct mortality of sheep as a result of being hit by vehicles using the new roadway.

Mitigation, such as fencing, barriers, sheep crossings, and highway design would reduce the direct impacts of mortality, and could reduce the extent to which wildlife movement is disrupted. This mitigation prevents the impacts to park resources and natural processes, such as bighorn sheep and other wildlife movement patterns, from becoming

unacceptable. Therefore, there would be no impairment to desert bighorn sheep as a result of the impacts associated with alternative D.

The acreage available to desert bighorn sheep adjacent to the proposed highway, and within other protected areas of Lake Mead NRA, including the Eldorado Mountains, prevents the impacts associated with alternative D from being an impairment to park resources. Alternative D is not inconsistent with the enabling legislation of Lake Mead NRA. Alternative D utilizes portions of a previously disturbed area, including an existing powerline corridor and approved road. Since the amount of acreage that would be utilized in this alternative (85 acres) is a small portion of the protected acreage in the recreation area, this alternative would not result in the derogation of the values and purposes for which the park was established.

Alternative D would result in major impacts to desert tortoise and their habitat. The southernmost section of alternative D passes approximately 1.6 km (1 mile) north of the Eldorado Valley Desert Tortoise Preserve. This land contains critical habitat for the desert tortoise. It is set aside for the project of this species and suitable habitat. The desert tortoise resides within the proposed project area. Tortoise sign noted along the route proposed in alternative D indicates that tortoise densities in the proposed project area range between low to moderate. Approximately 85 acres of habitat would be removed from the project area, which includes desert tortoise habitat. Consultation is ongoing with the U.S. Fish and Wildlife Service, and a finding of likely to adversely affect the desert tortoise is predicted. Mitigation adopted in consultation with the U.S. Fish and Wildlife Service and in accordance with NPS construction mitigation standards would reduce potential impacts to desert tortoises and the likelihood of take. This alternative would not result in a jeopardy finding. Therefore, the impacts as a result of implementing alternative D would not result in impairment to the desert tortoise.

Overall, alternative D would not likely be considered to constitute impairment because impacts to wildlife resources as a result of implementing this alternative would not result in the loss from the park of any native species or result in a native species no longer being capable of maintaining a viable population; or would not diminish wild life resources to the point that natural ecological processes in all or a significant portion of the park are permanently disrupted; or would not diminish wild life resources (e.g., the abundance of a species) to the point that the public no longer has an acceptable opportunity to enjoy the park resources; or would not preclude the park from attaining goals established in approved management plans. Alternative D would not eliminate or significantly diminish any resources for which the park was specifically established.

#### Land Use

As a result of alternative D, there would be major impacts to land use within Lake Mead National Recreation Area. There would be an estimated 85 acres of recreation area lands converted from a slightly disturbed area to a permanently disturbed four-lane highway with controlled access. This area is slightly disturbed as an approved road corridor and powerline corridor, currently exists. The lands that would be impacted if alternative D is implemented are located within the Boulder Basin Zone, Natural Zone, of the recreation



area, as defined within the General Management Plan (1986). The proposed project area does not include additional special area or resource zoning.

As a result of implementing alternative D, the existing approved road would be removed from public use. The utility corridors would remain in place. This acreage would no longer be available for recreational use to the general public. The existing road corridor of U.S. Highway 93 would remain in place, therefore, the land use impacts are cumulative. The 85 acres estimated to be utilized under this alternative would no longer be available for wildlife. Plants would be removed from this acreage, though some rehabilitation could occur along the highway.

Mitigation relating to the use of recreation area lands was addressed in a Section 4(f) evaluation within the environmental impact statement. Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC § 303) specifies that transportation programs requiring the use of publicly owned lands, such as recreation areas, may only be approved by the Secretary of Transportation if there is no feasible and prudent alternative to using that land; and the program or project area includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use. Measures to minimize harm to resources, including plants and wildlife, would be incorporated into the design and construction of all the build alternatives. Mitigation to protect wildlife would be incorporated into this alternative, and includes fencing, barriers, sheep crossing, and highway design to reduce the potential for direct mortality, and to reduce the impacts from wildlife movement disruption. Measures to minimize harm to park visitors include limiting or restricting recreational use, imposing trail-use regulations, scheduling construction activities in close coordination with the NPS, and providing ongoing information to the public.

Much of the acreage that would be utilized by implementing this alternative has been previously impacted by the existing utility corridor and an approved backcountry road. Recreational use does occur in the area, mainly from visitors using the approved roads and accessing the backcountry of the recreation area. The recreational use and value of the lands within and near the utility corridor is considered low. Overall, visitation to this area is low to moderate, and seasonal in nature. Therefore, there would be no unacceptable impacts on visitor enjoyment due to interference or conflict with other visitor use activities as a result of implementing this alternative. There would be no unacceptable impacts on park resources and natural processes, or unacceptable levels of danger to the welfare or safety of the public. The impacts associated with alternative D would not likely constitute an impairment to land use.

#### Soundscapes

Alternative D would add human-generated noise from motorized vehicles to an area where there is only negligible human-generated noise. Current levels of motorized use in this area are low. Vehicular access is currently provided by an approved road. Airplane noise can be heard from Hoover Dam and Grand Canyon air tours. Some noise is produced by the 230kV powerlines. Existing peak-hour noise levels in this region have been recorded at 41 dBA.

Under alternative D, areas within a distance of approximately 165 m (550 ft) from the highway would experience substantial noise level increases. During peak-hour, without mitigation, noise levels would increase from their current level of 41 dBA to 56 to 65 dBA. These noise levels expected at 45 to 165 m (150 to 550 ft) from the alternative D centerline, assuming a clear line-of-sight from outlying areas to the highway.

Noise can adversely affect park resources, including but not limited to natural soundscapes, wildlife, and the visitor experience. Noise can intrude or modify the natural soundscape, particularly in quiet places. Noise can indirectly impact wildlife resources by interfering with sounds important for animal communication, navigation, mating, nurturing, predation, avoiding predators, and foraging. Noise can impact visitor experience, particularly where management objectives for visitor experience include solitude, serenity, or a completely natural or historic environment.

The *NPS Management Policies* (Section 4.9) requires the recreation area to preserve, to the greatest extent possible, the natural soundscapes of the recreation area. Natural soundscapes exist in the absence of human-caused sound. *Management Policies* directs the Superintendent to identify what levels of human-caused sound can be accepted within the management purposes of the recreation area. *Director's Order 47: Soundscape Preservation and Noise Management* (2000) defines the overall goal of NPS units, to protect, maintain, or restore the natural soundscape resource.

Noise is considered a major impact to the natural soundscape when natural sounds are masked by human-caused noise frequently or for extended periods of time. Human-caused noise are often at moderate or higher levels compared to the natural soundscape in a majority of the area. Visitors do not have the opportunity to experience the natural soundscape free from human-caused noise the majority of the time. Duration and intensity of the human-caused noise, and time of day or time of year a given noise occurs, also have a significant influence on the impact it will have.

No mitigation to protect the soundscape of Lake Mead NRA was proposed in the mitigation or measures to minimize harm, since potential traffic mitigation measures are required by the Federal Highways Administration, to give primary consideration to those areas where "frequent human use" occurs and a lowered noise level would be of benefit. Since the portions of Lake Mead NRA which would be impacted by the implementation of alternative D are not deemed to be of "frequent human use," the determination was made by the Federal Highway Administration that noise abatement is not required for these areas.

The head of Goldstrike Canyon is an area believed to meet the definition of an area with "frequent human use" and therefore may require mitigation. This area serves as the trailhead and parking area for access into Goldstrike Canyon and has been determined eligible as a "Traditional Cultural Property" by the Native American Community. Protection of the sacred setting may warrant sound mitigation. The level of mitigation

will be determined through consultation with the Native American Community and the National Park Service.

Without mitigation to reduce noise to acceptable levels, including the construction of noise barriers, noise levels under alternative D would substantially exceed the existing noise levels, and could approach or exceed the Noise Ambient Criterion. This would not meet the requirements of *Management Policies*, or *Director's Order-47*. It could lead to unacceptable impacts to park resources.

A determination of impairment can not be completed until the mitigation to protect Goldstrike Canyon and the natural soundscape resources is developed.

#### Visual Resources

All build alternatives would require the disturbance of additional park lands, however, alternatives B and C are proximate to the existing road corridor, therefore, the impacts to visual resources would be moderate. Alternative D would add a four-lane highway, with road cuts, to an area previously disturbed from an existing utility corridor and approved backcountry road, and through undeveloped high ridges and canyons of the Eldorado Mountains. In addition, alternative D would require a 250-foot vertical cut in a mountainous ridge located outside the recreation area, but visible from within the recreation area. The impacts to the visual resources of Lake Mead NRA as a result of implementing alternative D would be major.

Mitigation, including highway design, corridor restoration and landscaping, recontouring and staining areas of high contrast, could reduce the impacts to the visual resources of the recreation area.

Since most of the proposed project lands are previously disturbed, and mitigation would be required to reduce the visual impacts of the four-lane highway, alternative D would not result in inconsistency with the recreation area's enabling legislation or proclamation, or derogation of the values or purposes for which the recreation area was established. The impacts to the visual resources associated with implementing alternative D would not likely constitute an impairment to the visual resources of the recreation area.

#### Ethnographic Resources

Based on information provided NDOT, the State Historic Preservation Office has approved the consultation effort to date but would require specific consultation on the Sullivan Turquoise Mine. The Sullivan Turquoise Mine is located within Lake Mead NRA near the head of Goldstrike Canyon, which was recently determined eligible for nomination to the National Register as a Traditional Cultural Property. The outcome of consultation on this property is unknown, therefore, the potential for impairment can not be determined.

#### Finding:

The effects of the Preferred Alternative will not impair Park resources or values necessary to fulfill specific purposes identified in the Park's enabling legislation. Impacts

documented in the EIS and summarized above will not affect resources or values key to the natural and cultural integrity of the Park or alter opportunities for enjoyment of the Park. The Preferred Alternative will not impair Park resources and will not violate the NPS Organic Act.

Approved:



William K. Dickinson, Superintendent  
Lake Mead National Recreation Area

7/22/02  
Date