

ENVIRONMENTAL ASSESSMENT  
FOR  
PROPOSED BIA ROUTE N60-65-67  
near  
Low Mountain, Arizona,  
Navajo Indian Reservation

*action file 3/25/03*  
*for ident.*

Prepared For

The Bureau of Indian Affairs  
Navajo Area Office  
Branch of Roads  
Gallup, New Mexco

Prepared By  
The U.S. Army Corps of Engineers  
Albuquerque District

## PROPOSED ACTION

The Bureau of Indian Affairs, Navajo Area Office, Branch of Roads, proposes to realign, widen, fence, and resurface Highways N60-65-67. The proposed construction will roughly parallel the existing unimproved routes and will link the Navajo communities of Whippoorwill, Smoke Signal, and Low Mountain. The newly designed and paved road will facilitate access to the nearby communities of Pinon, Chinle, and the Hopi Mesas. The location of the proposed action is shown in Figure 1.

The reconstruction will include the establishment of a formal 200-foot wide right-of-way. The design will better adapt the roadway to the existing topography. Culverts will be constructed over local drainages and the right-of-way will be fenced. The new road will be two lanes with an asphalt paved surface.

Alternatives to the proposed action include:

- (1) Surfacing the existing road with asphalt, without modifying the alignment;
- (2) Resurfacing with gravel as above;
- (3) Resurfacing or reconstructing the road without right-of-way fencing; and,
- (4) No Action, or leaving the road as is with only normal maintenance.

## ENVIRONMENTAL SETTING

### Natural Resources

The proposed project will form a continuous paved road that will completely encircle Low Mountain (see Figure 1).

Elevations along the route range from 6000 to 6300 feet above sea level. The topography consists mainly of broad alluvial valleys, canyons and mesas. Major vegetation communities include pinyon-juniper woodlands in the higher elevations and Great Basin Desertscrub in the lower elevations. Rainfall in the vicinity averages about 12 inches per year. Soils are generally shallow, sandy clay, and are alluvial in origin. The area is generally unproductive for agriculture due to lack of adequate moisture. However, contemporary Hopi and Navajo fields of the akchin type described by Hack (1942) are located at the mouths of long shallow arroyos where floodwaters fan out before reaching the major entrenched washes. Currently the entire area is open rangeland grazed by goats, sheep, and horses.

Grasses which provide primary forage for the range animals are associated with pinyon-juniper woodlands (where soils are not limiting) and with shrubs and herbaceous annuals in the lower valleys. The most prominent species include blue grama, sideoats grama, black grama, Arizona fescue, Indian ricegrass, dropseed, and ring-grass. Blue grama is probably the most abundant

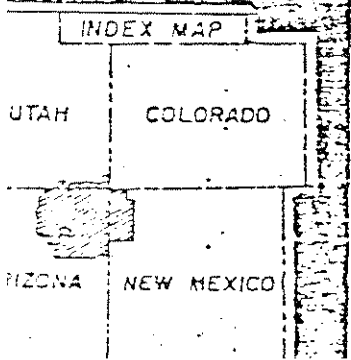
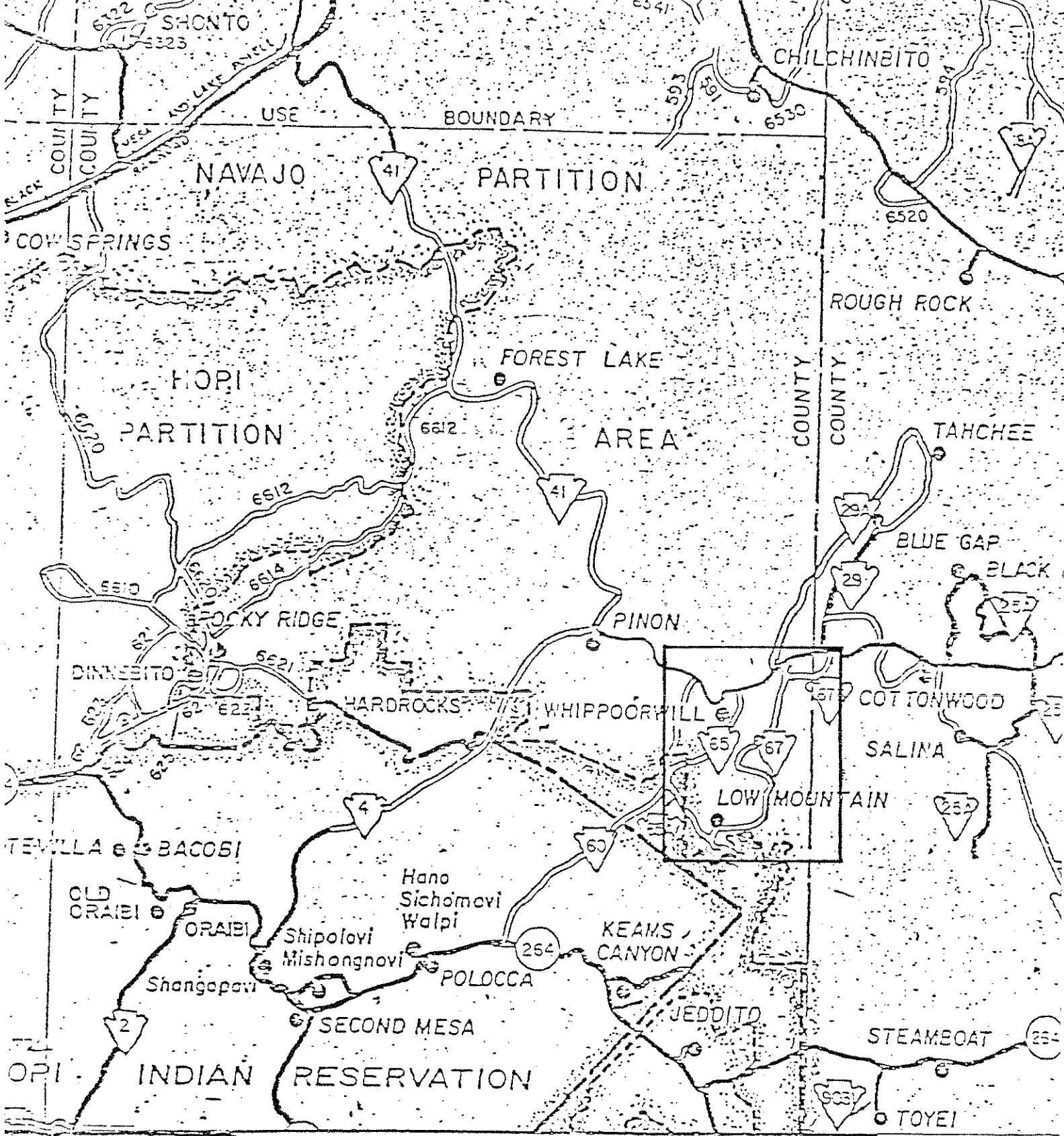
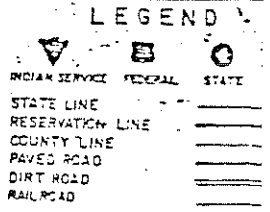


FIGURE 1  
 LOCATION MAP  
 BIA Proposed Reconstruction of  
 N-65&67 from N-4 to Low Mountain



1" = 8 Miles

and most important. Annuals are found throughout the area but are most abundant in the lower elevations. These include globemallow, mariposa, paintbrush, and beardtongue. Shrubs common to the area include cliffrose, big sagebrush, serviceberry, rabbitbrush, fernbush, black sage, and antelopebrush. Cacti found throughout the area include the Whipple cholla, beavertail, fragile cholla, prickly pear, and red hedgehog cactus. No federally listed endangered plant species are known to exist in the study area.

Mule deer and coyotes inhabit the Low Mountain area. Also common are songbirds, raptors, rabbits, and various rodents and reptiles. Bear and bobcat may be found at some of the higher elevations, but they are rarely seen and are not likely to appear in the immediate vicinity of the proposed road. Mountain lions, however, are known to exist in the area. There are no aquatic resources near the study area. The area is within the ranges of potential occupation by three federally listed endangered species: the bald eagle, peregrine falcon, and black-footed ferret. None of these species are known to exist currently anywhere along the proposed roadway, though sightings of all three have been reported in the general area in recent years. Further studies to assess potential effect in accordance with the Endangered Species Act are not likely to be needed.

#### Cultural Resources

The Low Mountain - Black Mesa area has been intermittently occupied from the Basketmaker II time period, about 600 B.C., to the present. The prehistoric population belonged to the Kayenta Branch of Anasazi, a regional subculture whose geographic boundaries included northeastern Arizona and southeastern Utah.

Throughout most of their history, the Kayenta Anasazi practiced agriculture and lived in dispersed settlements. Ongoing research on Black Mesa, to the north of the N60-65-67 project area, has focused on the role of demographic processes in cultural change. Fluctuations and changes in demographic distributions and subsistence strategies occurred throughout the occupational history of the region in response to unstable ecological conditions. The long-term trend indicates increased resource diversification, a greater reliance on storage, decreased mobility, and an emphasis on local exchange and resource sharing networks.

More recently, this area has been homeland of the Navajos, an Athapascan speaking tribe, who migrated to the Southwest about A.D. 1500, and settled in the Gobernador and Largo drainages of north central New Mexico. In the 1600s, the Navajos acquired horses, sheep, and goats from the Spanish. With the introduction of the horse, the Navajos developed a raiding economy, and captured both slaves and livestock. During the 1700s, increased conflicts between the Navajos and Spanish and other native Americans caused the Navajos to migrate westward into the Canyon de Chelly area (Hester 1962:76-86). During that time, the Navajos continued to develop their pastoral economic base, supplemented by subsistence agriculture.

Between 1863 and 1864, a military campaign under the leadership of Lieutenant-Colonel Kit Carson sought to end the Navajo raiding practices by destroying the economic base of the Navajos. Crops were burned and destroyed, and livestock were seized. One by one, Navajo bands surrendered to General G.E. Carlton, commander of the military department of New Mexico, who assigned them to a reservation at Bosque Redondo, Fort Sumner, New Mexico (Downs 1966:5). The attempt to convert the pastoral Navajos into full-time agriculturalists was doomed from the outset. Crop failures and the cultural preference of the Navajos for shepherding eventually led to their resettlement of a newly formed 3.5 million-acre reservation. With assistance from the United States Government, the Navajo reestablished themselves as shepherders. In 1882, the Hopi Reservation and joint use areas were established within the Navajo Reservation, eventually leading to the partitioning of the joint use area as specified in the Navajo-Hopi Land Settlement Act of 1974. The mandatory relocation of thousands of Navajos is expected to be completed by 1986.

### Social Economic Setting

The proposed N60-65-67 route lies mainly within the Navajo partitioned land. About 4 miles of N65 and N60 cross the Hopi partitioned area as shown in Figure 1. The road will serve as the primary access for the community of Low Mountain, Arizona.

Today, the Navajos compose the largest native American tribe north of Mexico. The Navajo Indian Reservation, which surrounds the Hopi reservation, occupies about 25,000 square miles--an area approximately three times the size of New Jersey. Most of the reservation is in northeastern Arizona, with smaller portions in New Mexico and Utah. Navajo country is traversed by only a few main travel routes, which support the transportation needs of approximately 150,000 Indians living on the Hopi and Navajo reservations. It has been stated that the two greatest needs of the Navajo people are better education and improved highways.

The Navajo Reservation is governed by the Navajo Tribal Council, assisted by the Bureau of Indian Affairs (BIA). The Tribal Council, headquartered in Window Rock, Arizona, comprises about 74 members from throughout the reservation. The BIA assists with the administration of land and resources, and provides educational and social services to the tribe.

The age composition of the Navajo Nation is young with more than 75 percent of the population under 17 years of age. This trend is recent, and is probably the result of improved diet and health care on the reservation. As employment potential on the reservation increases, the number of Navajos remaining on the reservation is expected to increase. Employment opportunities with the federal government and energy development companies such as Peabody Coal encourage young Navajos to stay on the reservations.

Most of the Navajo reservation is rural. There are no "cities" within the reservation. Small villages with populations of less than 1000 persons are scattered throughout the reservation. The average population density is 7

persons per square mile. The traditional matrilineal and matrilocal nuclear family persists, with some households supplementing their income with subsistence farming and animal husbandry. Since the 1940s, Navajo dependency on wage labor has increased, while income from livestock has decreased. Over the past fifty years, the Navajo social unit has become less dependent upon the production and consumption of livestock and agricultural products, and more dependent upon the consumption and redistribution of wage income and welfare, supplemented by income from agricultural and pastoral pursuits (Lamphere 1979:87). The primary land use is open range for cattle, sheep, horses, and goats. Other land uses on the reservation include hunting, wood gathering for fuel, forestry, and leasing lands for mineral extraction.

Educational and health facilities are available throughout the reservation, but access to them presents a major problem. About 70% of the roads that service the rural population are dirt surfaced, impassable during inclement weather, and require excessive maintenance. Poor transportation has deterred the development of adequate educational facilities. Consequently, educational achievement among the Navajos is very low. Most Navajos receive little or no education beyond the fifth grade.

## ENVIRONMENTAL EFFECTS

### Natural Resources

The most direct and visible effect of the proposed construction is the destruction of natural vegetation in areas where the new road will depart from the existing roadway. A narrow strip on each side of the route will also be disturbed by construction. Revegetation with native plants in disturbed areas, including borrow pits, will mitigate this effect. The location, amount of surface area to be impacted, and other quantitative aspects are not known at the present time.

The greatest probable long-term impact to wildlife will occur after construction. The improved road surface and alignment will permit increased speed and more traffic, and will increase the incidence of wildlife road kills. Deer and rabbits are particularly susceptible if they are caught in headlight glare. Small birds feeding next to the highway, raptors feeding on carcasses left on the highway, snakes crossing or basking on the warm surface of the road, and other small rodents or reptiles attempting to cross the road will likely succumb. No data are available with which to estimate the magnitude of increased road kills. However, the number of road kills is not expected to have a noticeable impact on any particular animal population. There is no expected effect on any species listed as endangered by the Fish & Wildlife Service in accordance with Endangered Species Act; therefore Section 7 consultation with the Fish & Wildlife Service is not expected to be necessary.

Fencing the right-of-way will greatly reduce livestock losses. The main purpose of the fencing is to prevent livestock from accidentally wandering onto the road and becoming a traffic hazard. Fencing and maintaining the 200 foot wide right-of-way will eliminate grazing in the area between the roadway and the fence.

Although the existing road is not a natural phenomenon, the reconstructed road and fencing will detract somewhat from the natural landscape. However, since the road will provide access to the scenic areas, it should enhance the overall appreciation of the natural environment. The proposed construction will not displace or disturb any known aesthetic features of the landscape.

### Socio-Economic Effects

The main effect of the proposed action is to improve vehicular access to the Low Mountain area. The approximately 2,000 residents of this area will benefit from improved access to schools, health facilities, shopping, employment, and social events. The new road may slightly increase the visitation and tourism in the area; however, other areas of greater interest nearby will most likely continue to attract most of the tourism in the area.

During construction, the proposed action will have direct temporary benefits providing some short term employment for local residents.

It is doubtful that the proposed action will encourage any immigration into the Low Mountain area. However, increased accessibility to the various social services will improve the overall quality of life, and thus encourage some residents to remain on the reservation rather than move to urban areas offering easily accessible services. Less emigration then may eventually increase the population of the area.

Automobile accidents, with the possible exception of alcohol-related accidents, are generally reduced as a result of roadway improvements. With the completion of the asphalt road, increased speeds and all-weather access may contribute to alcohol-related accidents. The improved road surface and alignment, however, should prevent accidents caused by poor road conditions.

During construction, some inconvenience to local residents and travelers will be unavoidable. However, this effect is temporary and will be mitigated by detours around construction areas.

### Cultural Resources

A total of 43 archeological sites, including 30 prehistoric Anasazi and 13 historic Navajo sites, and 62 isolated occurrences were located within the 400 foot-wide right-of-way surveyed for the proposed road.

The final design and alignment will avoid impacts to archeological sites where practicable. If avoidance is impractical for engineering or economic reasons, mitigation by study or data recovery will be necessary, in accordance with the National Historic Preservation Act and other applicable laws and regulations.

Alternatives to the proposed action include:

- (1) Surfacing the existing road and asphalt, without modifying the alignment;
- (2) Resurfacing with gravel as above;
- (3) Resurfacing or reconstructing the road without right-of-way fencing; and,
- (4) No action, or leaving the road as is with only normal maintenance.

For the purposes of a comparison, the effects of each of these alternatives are presented in Table 1. This table indicates that the proposed action will incur the greatest negative impact upon the natural environment, but will also provide substantial social and economic benefits to the local population. This impact scenario will generally apply to most all road construction projects. In this particular case, which is now pending in accordance with the Master Road Plan developed by the BIA for the Navajo Nation, the negative impacts are insignificant, due to the small quantity and low productivity of the natural habitat to be disturbed. However, the social and economic benefits, though not quantifiable, are considered to be substantial.



COMPARISON OF ALTERNATIVES

ALTERNATIVES

IMPACTS

	<u>Natural Resources</u>	<u>Social</u>	<u>Economic</u>	<u>Cultural</u>
Proposed Action (with R-0-W fencing)	Displace approximately 36 acres of presently undisturbed land. Increased road kills to wildlife. Some reduction of aesthetic quality.	Maximize social benefit due to improved access for medical, educational, and social interrelations, etc. Improve safety of road.	Highest cost to general taxpayer, greatest benefit to local area due to better access to employment, etc.	Highest probability of impact-may need to mitigate effect on some portion of archeological site
Asphalt Resurface, with no realignment (with R-0-W fencing)	No additional dis- placement. Probable increase in number of road kills of wild- life. Slight reduction is aesthetic quality.	Same benefits as above, but with less safety of road due to steeper grades, sharper curves, etc.	Lower Cost to taxpayers than above. Some reduced access during bad weather.	No significant imp
Gravel Surface, with no realignment (without R-0-W fencing)	Decreased negative aesthetic effect on landscape.	Increased probability of accidents due to motor vehicle collis- ion with game and livestock.	Would increase livestock losses due to accidents. Less grazing land would be lost to right-of-way area.	No difference in ir
* No Action	No effect	No effect	No effect	No effect

## MITIGATION

Any negative impact upon the natural, social, economic, and cultural environments of the proposed action will be mitigated through the following methods:

Effects upon local wildlife because of the habitat loss and road kills are not expected to be of sufficient magnitude to justify special management or mitigation.

Traffic disruption during actual construction will be mitigated by providing detours around construction sites.

Increased erosion and blowing dust caused by vegetation disturbances will be mitigated and implemented by the seeding and planting of native species.

Potential adverse effects to cultural resources due to disturbance of archaeological sites from road construction, would be avoided either by road alignment adjustments or by mitigation through archeological data recovery prior to construction.

FINDING OF NO SIGNIFICANT IMPACT

The Bureau of Indian Affairs, Branch of Roads, proposes to reconstruct about 20 miles of Routes N60-65-67, on the Navajo Indian Reservation, Arizona. Reconstruction will include a new right-of-way, that generally follows the existing route with only minor alignment modifications to more conveniently adapt the roadway to existing topography. The roadway will be improved from dirt to asphalt surface, and right-of-way fencing will be added.

The route of the proposed construction forms a circle around an isolated mesa known as Low Mountain. Vegetation consists of arid grasslands and pinyon-juniper woodlands. The common land use is open range for livestock grazing. The improved roadway will benefit the local Navajo population and other travelers through improved vehicular access. This, in turn, will enhance the social and economic status of the resident population. In particular, the availability of medical assistance, education and employment opportunities will be enhanced.

The vegetation and wildlife impacts of this undertaking are minor. No federally listed endangered species or habitat will be affected by the proposed action. No cultural resources will be affected by the proposed action without appropriate mitigation in accordance with the National Historic Preservation Act and other applicable cultural resource laws and regulations.

Based upon the above conclusions supported by the attached environmental assessment, it has been determined that the proposed action may be implemented without significant impact upon the human environment. Therefore, an Environmental Impact Statement is not required.

5/16/84  
Date

David H. Hayes Sr.  
Approved: Area Road Manager