



National Park Service
U.S. Department of the Interior
Salinas Pueblo Missions National Monument
Mountainair, New Mexico

Trail Modifications and Partial Backfilling of Mound 7 Environmental Assessment

August 2006



Trail Modifications and Partial Backfilling of Mound 7

Environmental Assessment

Summary

Salinas Pueblo Missions National Monument (Monument) proposes to harden some of the existing trails at the three units of the Monument (Abo, Quarai, and Gran Quivira) with asphalt or a similar agent. A new trail segment would be constructed along an old roadbed at Abo, while an existing segment of the trail would be removed to help prevent future social trails. At Quarai, an existing social trail would be hardened with asphalt or a similar agent, and the existing segment of trail not used would be removed. At Gran Quivira, three trail segments would be removed and the rest of the trail network would be hardened with asphalt or a similar agent. In addition, a boardwalk would be constructed from the mission to the visitor center at Gran Quivira, creating a “loop” trail. A new trail would be constructed across the front of the mission to connect the new boardwalk with the existing trails. The trail work would be designed so that no cuts or excavation below grade would be necessary. Crusher fines would be used to blend the asphalt into the existing environment.

The exposed elements at Mound 7 at Gran Quivira would be partially backfilled to stabilize the structure while assuring that the structural outlines and significant visible features remain exposed for interpretation. Railings would be installed around some of the openings into the structure for safety purposes. The backfill would come from local sources.

The purpose of this project is to improve accessibility to the three units by bringing the trails into compliance with current Americans with Disability Act (ADA) guidelines and to protect the resources from human-caused and natural degradation. The project is needed to increase visitor access and use by improving the gravel surface and steep grades; to increase visitor opportunities by clearly defining trails and incorporating social trail segments into the official trail network; and to stabilize and protect the exposed areas at Mound 7 from deterioration while assuring that the structural outlines and significant visible features remain exposed for interpretation.

Based on the purpose and need of the project, the objectives for the proposal are to 1) minimize impacts and prevent impairment to park resources and values; 2) increase visitor safety; 3) enhance visitor enjoyment; and 4) make the trails compliant with ADA requirements.

This Environmental Assessment evaluates three alternatives; a no action alternative, a trail modification and partial backfilling of Mound 7 alternative, and a trail modification and complete backfilling of Mound 7 alternative. The no action alternative is used as a baseline assessment, while the two action alternatives address modifying trails at Abo, Quarai, and Gran Quivira and backfilling, either partially or completely, Mound 7.

This Environmental Assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates potential issues and impacts to Salinas Pueblo Missions National Monument’s resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics that have been addressed in this document include soils, vegetation, archeological resources, cultural landscapes, ethnographic resources, visitor use and experience, and park operations. All other resource topics have been dismissed because the project would result in negligible or minor effects. No major effects are anticipated as a result of this project. Public scoping was conducted to assist with the development of this document, and all of the respondents supported the project.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or post comments online at <http://parkplanning.nps.gov/>. This environmental assessment will be on public review for 30 days. Our practice is to make comments, including names, home addresses, home phone numbers, and email addresses of respondents, available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of or officials of organizations or businesses, available for public inspection in their entirety.

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PURPOSE AND NEED

Introduction

Salinas Pueblo Missions National Monument (Monument) is located in central New Mexico near the town of Mountainair. Gran Quivira was established as a National Monument in 1909, with Abo and Quarai established in 1980. The three units were redesignated as Salinas Pueblo Missions National Monument in 1987. Figure 1 shows the location of the three units in relation to each other. The Monument was established to “set apart and preserve for the benefit and enjoyment of the American People the ruins of prehistoric Indian pueblos and associated seventeenth century Franciscan Spanish mission ruins.” The Monument offers visitors an opportunity to experience the physical remains of prehistoric cultures.

The purpose of this Environmental Assessment is to examine the environmental impacts associated with modifying existing trails and constructing new trail segments at the three units, and partially backfilling Mound 7 at Gran Quivira. This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR 1508.9), and the National Park Service Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-making*).

Purpose

The trails that exist at the three units do not meet current Americans with Disability Act (ADA) guidelines. The gravel trails and areas of steep grades limit access to those in wheelchairs or those with mobility issues. The gravel often migrates off the trails, potentially damaging the resources and requiring increasing amounts of maintenance. The development of social trails also contributes to the degradation of the resources. In addition, the excavated area at Mound 7 has left the structure vulnerable to deterioration, and openings in the structure pose a safety risk to both staff and visitors. Therefore, the purpose of this project is to improve accessibility to the units and to protect the resources from human-caused and natural degradation.

Need

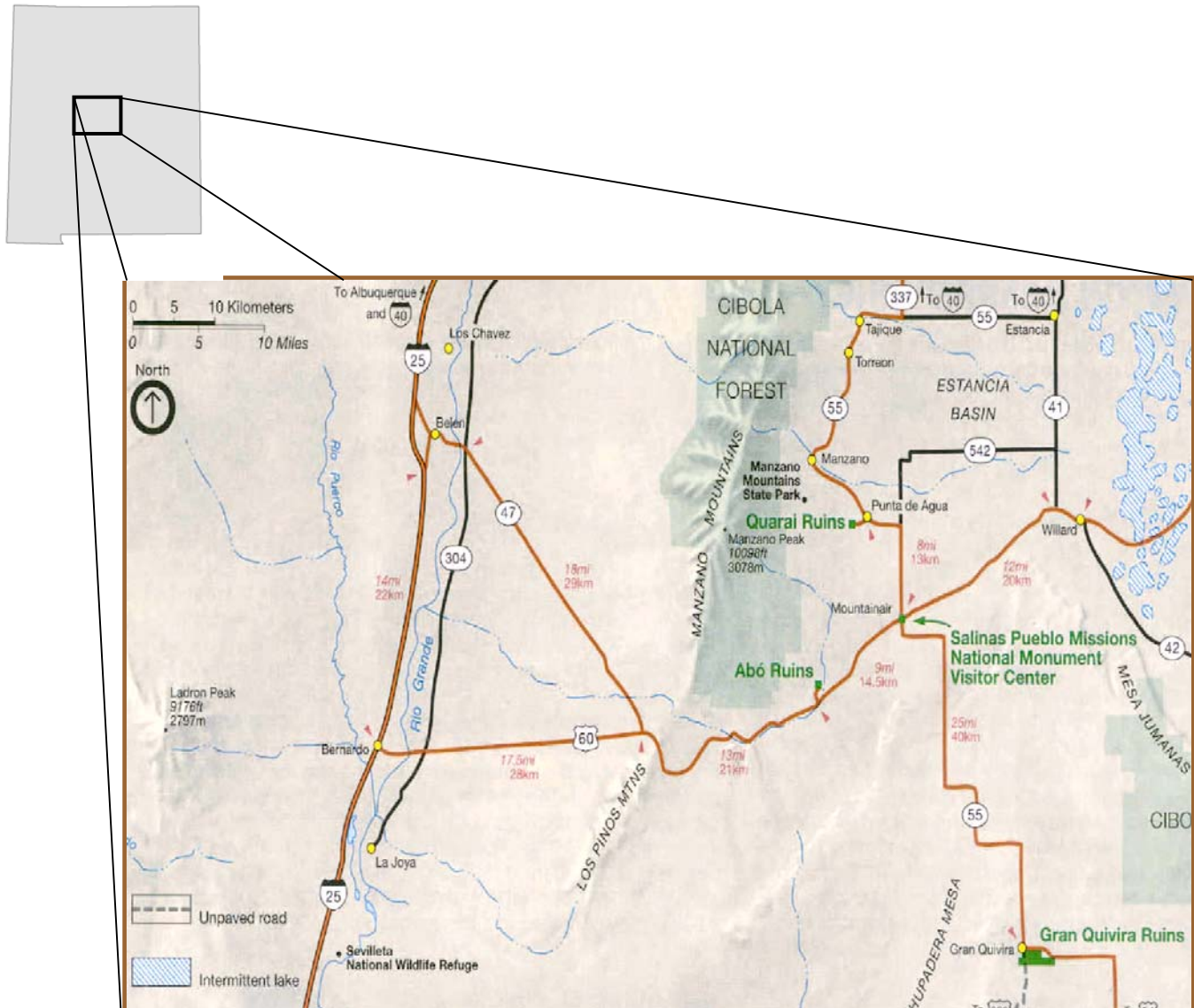
Due to the accessibility issues described above, many of the Monument's visitors cannot tour the units. The gravel surface and steep grades prevent visitors in wheelchairs, or those with mobility issues, from enjoying the full experience each unit has to offer. Therefore, the proposed project is needed to increase visitor access and use.

The network of social trails in the area has resulted in various impacts to the landscape over the years, particularly disturbance to natural and cultural resources. The number of social trails in the three units indicates the need for additional trails and visitor opportunities. The new trail segments would incorporate some of the social trails to provide visitors more direct access to the visitor centers and the resources. In addition, the hard-surfaced trail would provide a clear and defined walking path, which would help deter visitors from straying off-path. Therefore, the project is needed to increase visitor opportunities.

Mound 7, the Monument's largest and only fully excavated pueblo, has been deteriorating at a rate beyond the ability of the Monument's stabilization program to keep pace. The trails are not well defined, providing the potential for foot traffic to degrade the structure further. In addition, the at-grade opening to interior rooms poses a safety risk to both visitors and staff. Therefore, the project is needed to stabilize and protect the exposed structure from deterioration while assuring that the structural outlines and significant visible features remain exposed for interpretation.

Based on the purpose and need of the project, the objectives for the proposal are to 1) minimize impacts and prevent impairment to park resources and values; 2) increase visitor safety; 3) enhance visitor enjoyment; and 4) make the trails compliant with ADA requirements.

Figure 1 – Salinas Pueblo Missions National Monument Location Map



Relationship of the Proposed Action to Previous Planning Efforts

The proposal to modify the existing trails, establish new trail segments, and partially backfill Mound 7 in Salinas Pueblo Missions National Monument is consistent with National Park Service *Management Policies* (NPS 2000a). These policies call for protecting the integrity of natural resources, process, systems, and values of the park while providing opportunities for visitors to enjoy the parks. These policies also indicate that the National Park Service should work cooperatively with surrounding landowners to accomplish these goals.

Modifying the existing trail system and partially backfilling Mound 7 is also consistent with previous planning efforts for the Monument, including the 1984 *Salinas National Monument General Management Plan/Development Concept Plan* (NPS 1984), which recommends improving access for disabled visitors, designing trails to minimize impact of visitor traffic on both cultural and natural resources, and retaining cultural resources intact while allowing visitation. Additionally, the proposal is consistent with the 1985 *Salinas National Monument Interpretive Prospectus* and the 1997 *Salinas Pueblo Missions National Monument Resources Management Plan*, which reiterates the need to provide visitors, including disabled visitors, with reasonable access to the sites while assuring proper resource protection (NPS 1985, 1997).

Scoping

Scoping is a process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. Salinas Pueblo Missions National Monument conducted both internal scoping with appropriate National Park Service staff and external scoping with the public and interested/affected groups and agencies.

Internal scoping was conducted by an interdisciplinary team of professionals from Salinas Pueblo Missions National Monument and the National Park Service Intermountain Regional Office. Interdisciplinary team members met on January 25, 2006 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable future projects that may have cumulative effects; and possible mitigation measures. Over the course of the project, team members also conducted site visits to view and evaluate the proposed trail modifications and new trail segment alignments at the three units, as well as the area proposed for backfilling at Mound 7.

External scoping was initiated with the distribution of a scoping letter and an Internet posting to inform the public, stakeholders, agencies, and tribes of the proposal to construct a trail connection, and to generate input on the preparation of this Environmental Assessment. A copy of the scoping letter was also published in a regional newspaper. During the 30-day scoping period, three public responses were received. All of the comments were in support of the project. No other comments were received during scoping. More information regarding scoping can be found in the *Consultation and Coordination* section.

Impact Topics Retained for Further Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; National Park Service *2001 Management Policies*; and National Park Service knowledge of resources at Salinas Pueblo Missions National Monument. Impact topics that are carried forward for further analysis in this Environmental Assessment are listed below, along with the reasons why the impact topic is further analyzed. For each of these topics, the following text also describes the existing setting or baseline conditions (i.e., affected environment) within the project area. This information will be used to analyze impacts against the current conditions of the project area in the *Environmental Consequences* chapter.

Soils

According to the National Park Service's *2001 Management Policies*, the National Park Service will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2000a). These policies also state that the National Park Service will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

The Monument is located in the foothills of the Manzano Mountains, in the Estancia Basin. The basin is a low bowl in the high desert plains of east-central New Mexico. The area consists of Permian sedimentary

deposits of sandstone and limestone interlayered with gravel and conglomerates. The broad valleys and undrained depressions are covered to considerable depth by Quaternary alluvium. Gray San Andres limestone outcrops at Gran Quivira provided building material for mission and pueblo construction; at Abo and Quarai it is Abo sandstone and shale that was used for construction.

The soils at the three units comprise seven soil types: Alicia loam, Chupadera loamy fine sand, Encierro channery loam, La Fonda loam, Manzano loam, Otero and Palma soils, and Witt loam. These are generally loamy fine sands on the surface and are of shallow to deep depth, with rapid permeability and low moisture-holding capacity. They are generally unstable, with both wind and water erosion occurring at all three units. Soil erosion occurs where vegetation cover is sparse and slopes are steep; these areas are especially prone to erosion from surface runoff during storms.

Soil erosion and loss has occurred, at varying degrees, on all Monument trails. Soil erosion may initially occur from soils being loosened from visitor use, and then may be removed by wind and water associated with storm events. Some soils, particularly on steeper sections, are more susceptible to erosion than other sections. Past use of the area, including creation of social trails, has had measurable effects on soils; therefore, this impact topic was retained for further analysis.

Vegetation

According to the National Park Service's *2001 Management Policies*, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2000a).

The dominant vegetation type in the three units is piñon and juniper, various cacti, shrubs, and grasses. The dominant species at Gran Quivira are single-seed juniper (*Juniperus monosperma* [Engelm.] Sarg.), walking stick cholla (*Opuntia imbricate*), four-wing saltbush (*Artilex canescens* [Pursh] Nutt.) and various species of yucca (*Yucca Spp.*). At Abo, the vegetation is dominated by grama grasses (*Bouteloua Spp.*), cholla, and single-seed juniper. Quarai, with its more abundant water, is dominated by cholla but also contains a grove of cottonwoods (*Populus fremontii* Wats.), willows (*S. lutea* Nutt.), and wild roses (*Rosa Spp.*)

The proposed project would include modifying the trail system by hard-surfacing and adding new segments to the system that would require the removal of some vegetation. Long-term use of the trail would likely prohibit regrowth of this vegetation. These actions are considered to have measurable effects; therefore, the topic of vegetation was carried forward for further analysis.

Archeological Resources

Section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the National Park Service's Director's Order #28: *Cultural Resource Management Guideline*; and National Park Service *2001 Management Policies* (NPS 2000a) require the consideration of impacts on historic properties that are listed or eligible to be listed in the National Register of Historic Places. The National Register is the nation's inventory of historic places and the national repository of documentation on property types and their significance. The above-mentioned policies and regulations require federal agencies to coordinate consultation with State Historic Preservation Officers and stakeholders/interested parties regarding the potential effects to properties listed on or eligible for the National Register of Historic Places.

The National Park Service, as steward of many of America's most important cultural resources, is charged with preserving historic properties for the enjoyment of present and future generations. Management decisions and activities throughout the National Park Service must reflect awareness of the irreplaceable nature of these resources. The National Park Service will protect and manage cultural resources in its custody through effective research, planning, and stewardship, and in accordance with

the policies and principles contained in the *2001 Management Policies* and Director's Order #28: *Cultural Resource Management Guideline* (NPS 1998).

In addition to the National Historic Preservation Act and the National Park Service *2001 Management Policies* (NPS 2000a), the National Park Service's Director's Order #28A: *Archeology* (NPS 2004a) affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the National Park System. As one of the principal stewards of America's heritage, the National Park Service is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the National Park Service reflect a commitment to the conservation of archeological resources as elements of our national heritage.

All lands within the Monument are listed on the National Register of Historic Places (NRHP). The Monument contains several hundred archeological sites, but the trail system only runs through the pueblo/mission complexes at Abo, Gran Quivira, and Quarai. Preserved within the three units are prehistoric and historic Indian pueblos and seventeenth-century Spanish Franciscan mission complexes. These are considered the primary resources for which the area was established as a national monument.

The three units are continually affected by natural forces, which cause deterioration of the excavated ruins. Unfortunately, the park's annual emergency stabilization program has proven to be inadequate in keeping pace with the rate of damage occurring each year.

The entire Monument is listed on the NRHP, and the trail modification and partial backfilling of Mound 7 would be a direct impact to archeological resources; therefore, this topic was carried forward for further analysis.

Cultural Landscapes

According to the National Park Service's Director's Order #28: *Cultural Resource Management Guideline*, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built (NPS 1998).

Cultural Landscape Inventories (CLI) for Abo and Quarai have been completed, which identified cultural landscape elements relating to various periods of significance (i.e., Spanish Colonial, puebloan, re-occupation) (NPS 2002, 2002a). The inventories identified both physical landscape elements and less tangible elements, such as community space and vegetation patterns. The New Mexico State Historic Preservation Office reviewed the CLI reports and concurred with a determination of eligible for "built environment resources and non-archaeological landscape features" (HPD 2004). Although a CLI has not been completed for Gran Quivira, the Monument assumes eligibility for the Gran Quivira cultural landscape under the same criteria espoused by HPD for Abo and Quarai, given that similar physical landscape elements exist at all three units.

As the trail modifications would have an impact on eligible cultural landscape elements, this topic was carried forward for further analysis.

Ethnographic Resources

National Park Service Director's Order #28: *Cultural Resource Management Guideline*, defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it (NPS 1998). According to DO-28 and Executive Order 13007 on sacred sites, the National Park Service should strive to preserve and protect ethnographic resources.

Thirteen pueblos and tribes have been identified as being culturally affiliated with the Monument. A scoping newsletter was mailed to the park's affiliated tribes. All responses were in support of the proposed project and did not indicate concern with nor identify ethnographic resources. In addition, the Mission churches are still used for events, weddings, and concerts by local community members. The proposed project would impact these uses; therefore, this topic was carried forward for further analysis.

Visitor Use and Experience

According to *2001 Management Policies*, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units (NPS 2000a). The National Park Service is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the National Park Service will provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The National Park Service *2001 Management Policies* also states that scenic views and visual resources are considered highly valued associated characteristics that the National Park Service should strive to protect (NPS 2000a).

Visitation at Salinas Pueblo Missions National Monument has decreased slightly over the last decade. However, the explosive growth rate of Albuquerque and the Rio Grande Basin would likely result in increased visitation. Approximately 35,000 people visited the Monument in 2005 for recreational purposes. The busiest months for visitation to the monument are July and October (NPS 2006).

Visitors have opportunities to understand, appreciate, and enjoy the resources through interpretive programs, wayside exhibits, and visiting the units via the trail network. Due to the condition of the trails, some visitors have difficulty accessing the units. The gravel surface limits mobility for some visitors, especially those in wheelchairs or requiring walking assistance. The current condition of Mound 7, non-specific trail alignments, and at-grade openings to view rooms present a fall hazard and are causing safety concerns for the visitors and staff. The creation of social trails within the units increases the potential for conflicts with rattlesnakes and poses an additional safety concern for visitors, as well as a resource protection issue.

The improvements to the trails in the three units and the partial backfilling of Mound 7 would increase visitor opportunities and improve visitor enjoyment and safety; therefore, this topic was carried forward for further analysis.

Park Operations

Salinas Pueblo Missions National Monument has a small staff, with one ranger on duty at each unit during visiting hours, which limits the amount of time the ranger can spend on the trails monitoring use.

In addition, the small Monument staff has difficulty keeping up with maintenance of the trails and the resources. As a result, the workload continues to increase as the resources deteriorate. Trail maintenance requires adding gravel to all trails once or twice a year, re-grading the trails after a rain event, and after a snowfall it can take four staff members up to three days to open the trails at all three units. The condition of the trails and the resources poses a safety issue for the Monument staff.

The decreased maintenance that would be required on the trail system, decreased stabilization work expected on Mound 7, and the reduction in social trails that would result from implementation of this plan would have a measurable beneficial effect on Monument staff; therefore, this topic was carried forward for further analysis.

Impact Topics Dismissed From Further Analysis

Some impact topics have been dismissed from further consideration, as listed below. The rationale for dismissing these specific topics is stated for each resource.

Wildlife

According to the National Park Service's *2001 Management Policies*, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2000a).

The project area primarily comprises piñon and juniper woodland with associated desert shrubland. There are areas of riparian vegetation at Abo and Quarai. The vegetation supports a wide variety of wildlife. There are no resident populations of large game animals within the Monument; however, mule deer, antelope, and mountain lion may be seen. Smaller animals include brush mouse, white-footed mouse, white-throated woodrat, cottontails, jackrabbits, coyotes, and skunks.

Birds found in the three units include violet-green swallows, phainopepla, Cooper's hawk, great horned owl (within the church), ladder-backed woodpecker, western wood-pewee, Say's phoebe, plumbeous vireo, rock wren, western bluebird, mountain bluebird, yellow-breasted chat, western tanager, black-headed grosbeak, blue grosbeak, lesser goldfinch, song sparrows, white-crowned sparrows, black phoebe, mourning dove, ash-throated flycatcher, western scrub-jay, Bewick's wren, juniper titmouse, chipping sparrow and the occasional gray flycatcher

Reptiles occurring in the project area include the western rattlesnake and several species of lizard, including the collared lizard. Due to the lack of water in the project area, no known fish or amphibians inhabit the area.

The proposed modifications to the trails and the partial backfilling of Mound 7 would likely displace wildlife, thereby having a negligible to minor adverse effect on wildlife. Use of the trail by people would further disturb wildlife and wildlife habitat; however, this impact is expected to be minor. Any disturbed areas created by construction activities outside of the new trail corridor, such as staging areas, would be revegetated and rehabilitated following construction activities.

Construction activities on the trail, work crews, and the placement of staging (material) areas would also have temporary adverse impacts on wildlife to a minor degree; however, these effects would last only as long as the construction period. Dust and noise would increase, which may disturb wildlife in the general area and would be temporary, lasting only as long as construction. Because the effects to wildlife and wildlife habitat from the proposed project would be minor to negligible, this topic was dismissed from further consideration.

Special Status Species

The Endangered Species Act of 1973 requires examination of impacts on all federally listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service (or designated representative) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the *2001 Management Policies* and Director's Order #77: *Natural Resources Protection* require the National Park Service to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive wildlife and vegetation species (NPS 2000a).

According to Monument staff, no threatened or endangered species are known to inhabit the proposed project area. The bald eagle (*Haliaeetus leucocephalus*), whooping crane (*Grus americana*), and black-

footed ferret (*Mustela nigripes*) are listed in the region. There is no designated critical habitat for the species within the Monument. No endangered or threatened plants are listed for the area.

The federally-listed mammal and bird species are transient through the project area. Trail construction-related activities could potentially disturb them, but these adverse impacts would be 1) temporary, lasting only as long as construction, and 2) negligible, because of lack of suitable habitat and the species' transient nature. Post-construction recreational activities would also have negligible effects on all of the species as human use would be similar to current levels of use.

Because implementation of the proposed action would result in negligible to minor short-term adverse impacts to species of management concern, this topic was dismissed from further consideration.

Water Resources

National Park Service policies require protection of water quality consistent with the Clean Water Act. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To enact this goal, the U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in potential degradation of waters of the United States and issuing permits for actions consistent with the Clean Water Act. The U.S. Environmental Protection Agency also has responsibility for oversight and review of permits and actions that affect waters of the United States.

There is no permanent surface water at Gran Quivira, but several wells have been drilled. The principal water-bearing formation is the Yeso formation of siltstone, fine-grained sandstone, gypsum, and limestone. Both Abo and Quarai contain springs that support small standing pools of water and associated riparian areas. There is evidence that at least two springs emerge in the Quarai vicinity. The trail modifications are expected to decrease erosion during runoff events. (Erosion of soils is further addressed under the topic Geology and Soils, which is carried forward for further analysis.) Water quality, water quantity, and drinking water are not expected to be affected by the project. Because the project would result in negligible effects to water resources, this topic was dismissed from further consideration.

Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 *Protection of Wetlands* requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge or dredged or fill material or excavation within waters of the United States. National Park Service policies for wetlands as stated in 2001 *Management Policies* and Director's Order #77-1: *Wetlands Protection*, strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands (NPS 2000a, NPS 2002b). In accordance with DO #77-1 *Wetlands Protection*, proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings for wetlands. No wetlands are located in the project area; therefore, a Statement of Findings for wetlands will not be prepared, and the topic of wetlands has been dismissed from further consideration.

Floodplains

Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within a 100-year floodplain unless no other practicable alternative exists. The National Park Service, under 2001 *Management Policies* and Director's Order #77-2: *Floodplain Management*, will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order #77-2:

Floodplain Management, certain construction within a 100-year floodplain requires preparation of a Statement of Findings for floodplains (NPS 2000a, NPS 2003). Although floodplains are located in the project area, they are excepted from floodplain guidelines because the resources protected in the Monument's enabling legislation may occur in the floodplains and their protection supersedes that of the floodplains. Therefore, a Statement of Findings for floodplains will not be prepared, and the topic of floodplains was dismissed from further consideration.

Wilderness

According to the National Park Service's *2001 Management Policies*, the National Park Service will evaluate all lands it administers for their suitability for inclusion within the national wilderness preservation system, and for those lands that possess wilderness characteristics, no action will be taken that would diminish wilderness suitability (NPS 2000a). According to the 1964 Wilderness Act, which established the national wilderness preservation system, wilderness is defined as, "...an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

There is no congressionally designated or recommended wilderness at Salinas Pueblo Missions National Monument; therefore, the topic of wilderness was dismissed from further analysis.

Museum Collections

According to Director's Order #24: *Museum Collections Management*, the National Park Service requires the consideration of impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material), and provides further policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, National Park Service museum collections (NPS 2004b). The proposed project would not disturb any curatorial facilities or contribute any additional collections to curatorial facilities; therefore, museum collections at Salinas Pueblo Missions National Monument would not be affected by the proposed project, and this topic was dismissed from further consideration.

Air Quality

The Clean Air Act of 1963 (42 U.S.C. 7401 *et seq.*) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with National Park Service units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. Salinas Pueblo Missions National Monument is designated as a Class II air quality area under the Clean Air Act. A Class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in Section 163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

Construction activities, such as hauling materials and operating equipment, could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the general project area. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized, and would likely dissipate rapidly. Overall, the project could result in a negligible degradation of local air quality, and such effects would be short-term, lasting only as long as construction activities are being conducted. The Class II air quality designation for Salinas Pueblo Missions National Monument would not be affected by the proposal; therefore, air quality was dismissed from further consideration.

Soundscape Management

In accordance with *2001 Management Policies* and Director's Order #47: *Sound Preservation and Noise Management*, an important component of the National Park Service's mission is the preservation of natural soundscapes associated with national park units (NPS 2000a,b). Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

The soundscape in the area of the three units comprises both man-made and natural sounds. The units are in proximity to residential housing, roadways, and a railroad. The common man-made sounds are vehicular traffic, residential type machinery, and people. The natural sounds are composed of birds, wildlife, and wind.

This project would not contribute to long-term impacts to the soundscape at Salinas Pueblo Missions National Monument. The proposed project would likely have temporary impacts to the soundscape while construction activities are conducted, such as human-caused sounds from equipment, vehicular traffic, and people. Any sounds generated during the modification and backfilling activities would be temporary, lasting only as long as the activity that is producing the sounds, and would have a negligible adverse impact on visitors and employees. Therefore, the topic of soundscape management was dismissed from further consideration.

Lightscape Management

In accordance with *2001 Management Policies*, the National Park Service strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human-caused light (NPS 2000a). Salinas Pueblo Missions National Monument strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. The Monument also strives to ensure that all outdoor lighting is shielded to the maximum extent possible to keep light on the intended subject and out of the night sky. The residential communities adjacent to the Monument are the primary sources of light at the Monument. No exterior lighting is proposed for this project and no impacts to the lightscape are expected; therefore, this topic was dismissed from further consideration.

Socioeconomics

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of the proposed action could provide a negligible beneficial impact to the economy of nearby Mountainair due to minimal increases in revenues for local businesses generated from restoration activities and increased long-term visitation. Any increase in workforce revenue, however, would be temporary and negligible, lasting only as long as the modification and backfilling activities occur. Because the impacts to the socioeconomic environment would be negligible, this topic was dismissed from further consideration.

Prime and Unique Farmlands

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service, and is defined as soil that particularly produces general crops, such as common foods, forage, fiber, and oil seed; and unique farmland produces specialty crops, such as fruits, vegetables, and nuts. In order to be considered prime and unique, the farmland must be irrigated. The

Monument does not irrigate any of its lands; and, therefore does not contain prime or unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed from further consideration.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources at Salinas Pueblo Missions National Monument. The lands comprising the Monument are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, the project would have no effects on Indian trust resources, and this topic has been dismissed from further consideration.

Environmental Justice

Executive Order 12898 *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Because the trail modifications and newly constructed trail segments, as well as the changes to Mound 7, would be available for use by all people regardless of race or income, and the construction workforces would not be hired based on their race or income, the proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities. Therefore, environmental justice has been dismissed from further consideration.

ALTERNATIVES CONSIDERED

During January of 2006, an interdisciplinary team of National Park Service employees met for the purpose of developing project alternatives. This meeting resulted in the definition of project objectives as described in the *Purpose and Need*, and a list of alternatives that could potentially meet these objectives. A total of five action alternatives and the no action alternative were originally identified for this project. Of these, three of the action alternatives were dismissed from further consideration for various reasons, as described later in this chapter. Two action alternatives and the No Action Alternative were carried forward for further evaluation in this Environmental Assessment. A summary table comparing alternative components is presented at the end of this chapter.

Alternatives Carried Forward

Alternative A – No Action

Under this alternative, the trails would not be modified, new segments would not be constructed, and Mound 7 would remain as is. The trails would continue to pose an accessibility issue, a maintenance issue, and the social trails would continue to be used, damaging natural and cultural resources. Mound 7 would continue to deteriorate, posing a risk to the structure as well as to the visitor and staff. Should the No Action Alternative be selected, the National Park Service would continue to manage the trail network and resources without modifications or improvements.

Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, the majority of the existing trails would be hardened with asphalt or a similar agent. A new trail segment would be constructed along an old roadbed at Abo, while an existing segment of the trail would be removed to help prevent future social trails. At Quarai, an existing social trail would be hardened with asphalt or a similar agent, and the existing segment of trail that is not used would be removed. At Gran Quivira, three trail segments would be removed and the rest of the trail network would be hardened with asphalt or a similar agent. In addition, a boardwalk would be constructed from the mission to the visitor center at Gran Quivira, creating a “loop” trail. A new tail would be constructed across the front of the mission to connect the new boardwalk with the existing trails. The trail work would be designed so that no cuts or excavation below grade would be necessary. See figures 2-4 for the location of the trail modifications at each unit. Crusher fines would be used to blend the asphalt into the existing environment.

The exposed elements at Mound 7 at Gran Quivira would be partially backfilled to stabilize the structure while assuring that the structural outlines and significant visible features remain exposed for interpretation. Railings would be installed around some of the openings into the structure for safety purposes. The backfill would come from local sources.

To implement this alternative, temporary construction staging, material stockpiling, and equipment storage areas would be located within each unit. Staging areas currently used for routine maintenance and stabilization activities at each unit would be used for this project, and would be fenced or taped off from visitor contact. No changes to current staging areas would be required before, during, or after the proposed project, and no new staging areas would be required.

This alternative is based on preliminary designs and the best information available at the time of this writing. Specific areas and layouts used to describe the alternative are only estimates and could change during final design. If changes during final design are not consistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

Figure 2 – Trail Modifications at Abo

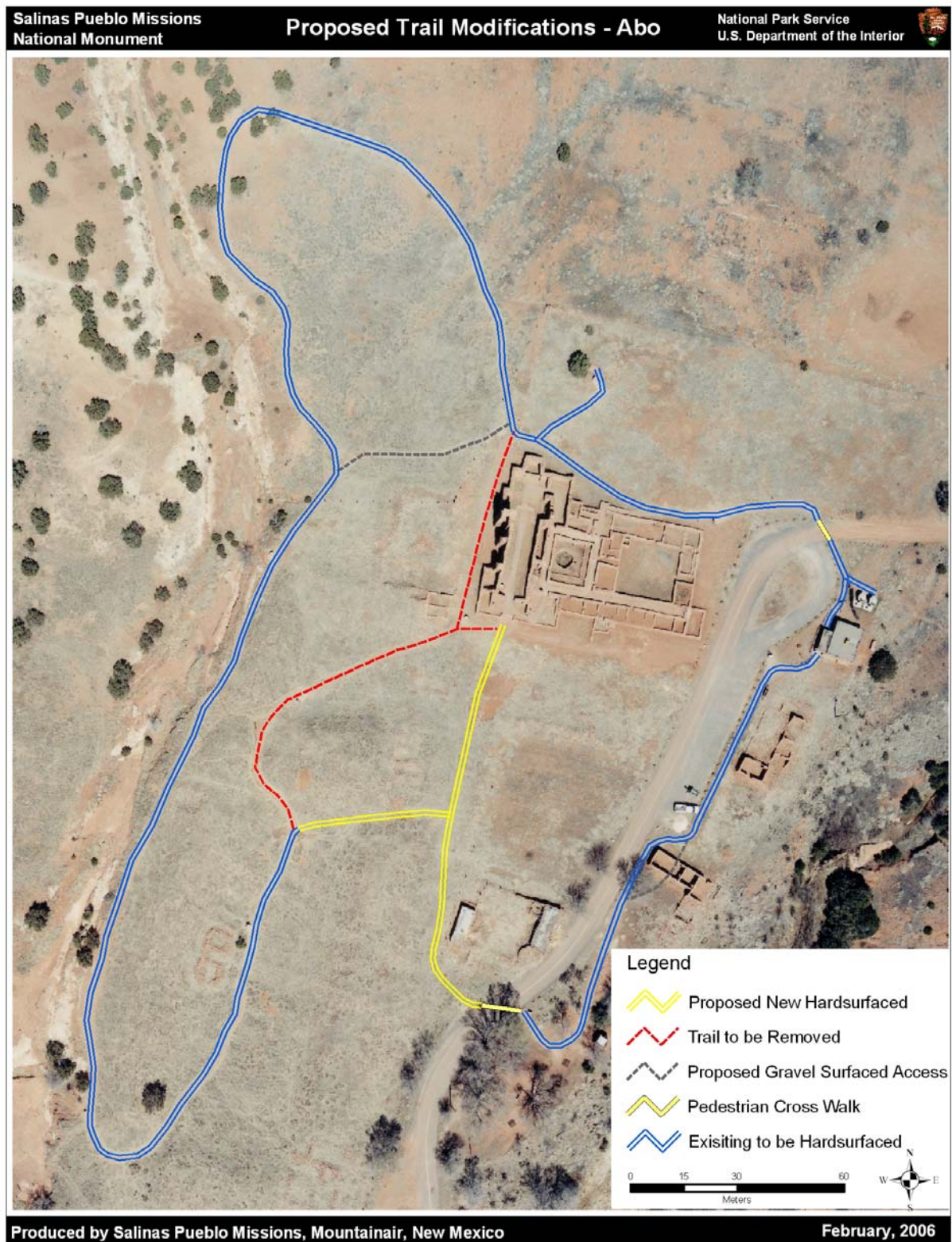
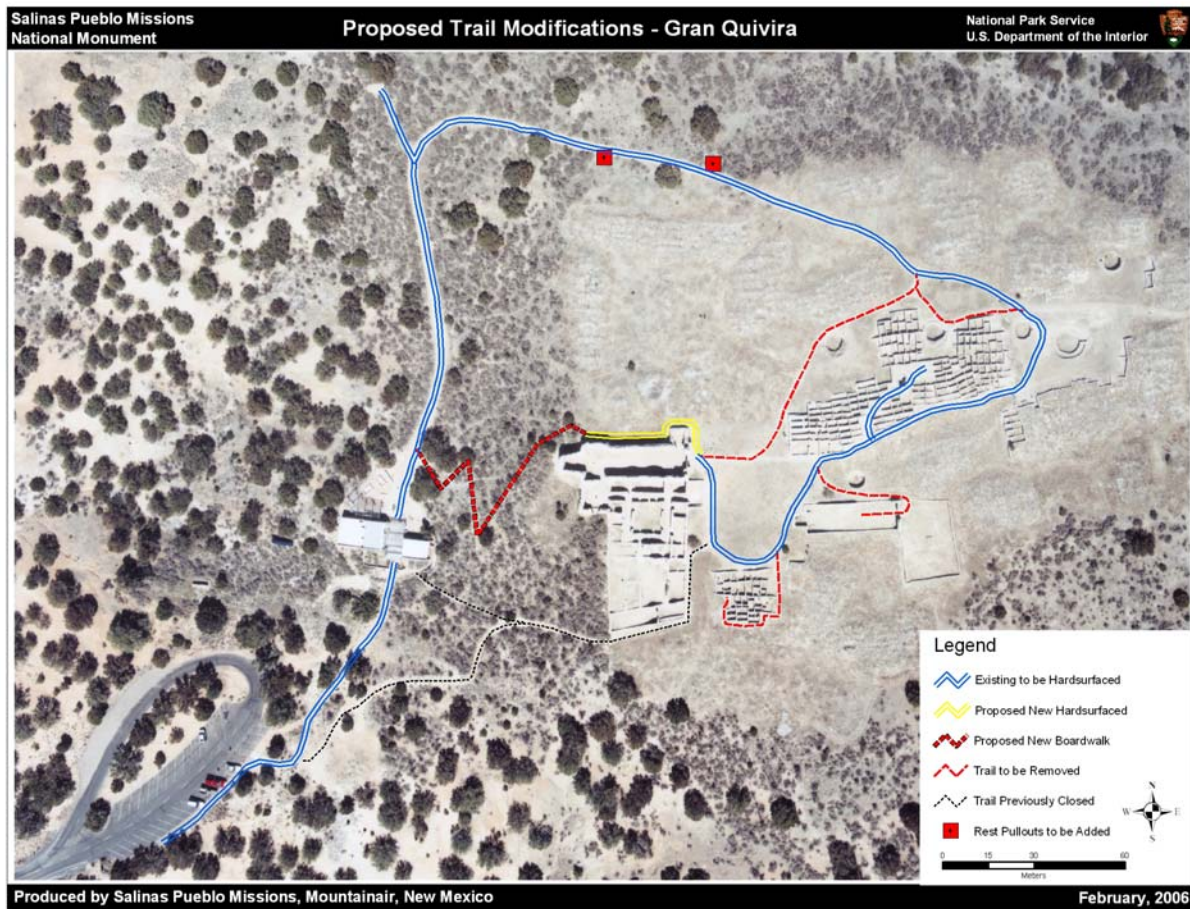


Figure 3 – Trail Modifications at Quarai



Figure 4 – Trail Modifications at Gran Quivira



Alternative C – Trail Modification and Complete Backfill of Mound 7

This alternative includes all the same trail modifications as describe for Alternative B except at Abo. The trails at Abo would remain unchanged, the new segment along the old roadbed would not be built, the existing trail segment would not be removed, and the entire trail would be hardened with asphalt or a similar agent.

The exposed elements at Mound 7 at Gran Quivira would be completely backfilled to stabilize the structure. None of the existing structural outlines of visible feature would remain exposed. No railings would be required since there would be no exposed openings. The backfill would come from local sources.

To implement this alternative, temporary construction staging, material stockpiling, and equipment storage areas would be located within each unit. Staging areas currently used for routine maintenance and stabilization activities at each unit would be used for this project, and would be fenced or taped off from visitor contact. No changes to current staging areas would be required before, during, or after the proposed project, and no new staging areas would be required.

This alternative is based on preliminary designs and the best information available at the time of this writing. Specific areas and layouts used to describe the alternative are only estimates and could change during final design. If changes during final design are not consistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

Alternatives Considered and Dismissed

The following three alternatives were considered for project implementation, but were ultimately dismissed from further analysis in this Environmental Assessment. Reasons for their dismissal are provided in the following alternative descriptions.

- **Construct a new trail route at Gran Quivira using an old maintenance road and no boardwalk from the back of the mission to the Visitor Center** – This alternative considered constructing a new trail route around Gran Quivira. Due to the potential for measurable impacts to the cultural resources from the increased ground disturbance and the visually intrusive nature of the new trail, this alternative was dismissed from further consideration.
- **Construct ADA-compliant trails (hard-surfacing and ramp systems) throughout the Mission structures** - This alternative considered constructing ramps up to the mission structures and hard surfacing the interiors of the structures to increase accessibility. Due to the measurable visual impacts and the resource preservation impacts associated with introducing non-historic elements into the fragile structures, this alternative was dismissed from further consideration.
- **Use of other trail soil amendments to harden the surfaces, including road oil and environmental surfaces (peach or apricot pit)** – This alternative considered adding other soil amendments to the trails to achieve the same objectives. The Monument has tried these options in the past and found that due to the high UV and precipitation events, these amendments did not provide long-term stabilization, nor did they achieve ADA compliance. Therefore, this alternative does not meet the project's objectives and was dismissed from further consideration.

Mitigation Measures

The following mitigation measures have been developed to minimize the degree and/or severity of adverse effects, and would be adhered to during implementation of the preferred alternative:

- Construction activities would be scheduled to minimize construction-related impacts to visitors. Areas not under construction would remain accessible to visitors as much as is safely possible.
- A construction zone for the trail work and backfilling, as well as staging areas and work zones, would be identified and demarcated with construction tape or some similar material prior to any construction activities. The tape would define the zone and confine the activity to the minimum area needed for implementing the project. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the zone as defined by the fencing. In addition, the National Park Service would ensure that all workers are informed that damage to resources outside the scope of work is subject to prosecution, fine, restitution costs, and other penalties.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites, away from visitor use areas to the extent possible. These staging areas are already used for stabilization activities and have been previously cleared. All staging and stockpiling areas would be returned to pre-construction conditions following construction. Existing vegetation at the site would not be disturbed to the extent possible.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the park would consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to Section 36 CFR 800.13, *Post Review Discoveries*. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The National Park Service would ensure that all workers are informed of the penalties for illegally collecting resources or intentionally damaging resources. Construction workers and supervisors would be informed about the special sensitivity of the Monument's values and regulations.

Alternative Summaries

Table 1 summarizes the major components of Alternatives A, B, and C, and compares the ability of these alternatives to meet the project objectives (the objectives for this project are identified in the *Purpose and Need* chapter). As shown in the following table, Alternatives B and C meet each of the objectives identified for this project to varying degrees, while the No Action Alternative does not meet these objectives.

Table 1 – Summary of Alternatives and Extent to Which Each Alternative Meets Project Objectives

Alternative Elements	Alternative A – No Action	Alternative B	Alternative C
Modify existing trails by hardening them with asphalt.	None of the trails would be modified.	Existing trails would be hardened with asphalt.	Same as Alternative B.
Construct a new trail segment at Abo.	No new trail segments would be constructed at Abo.	A new trail segment at Abo would be constructed.	No new trail segment would be built at Abo.
Construct a boardwalk at Gran Quivira.	No boardwalk would be constructed.	A boardwalk would be constructed linking the mission to the Visitor Center creating a "loop" trail around the unit.	Same as Alternative B.
Backfilling of Mound 7.	Mound 7 would not be backfilled.	Mound 7 would be partially backfilled.	Mound 7 would be completely backfilled.

Project Objectives	Meets Project Objectives?	Meets Project Objectives?	Meets Project Objectives?
Minimize impacts and prevent impairment to park resources and values	No. The trails and Mound 7 would continue to deteriorate, causing impacts to soils, vegetation, and cultural resources.	Yes. Trails would be modified, lessening impacts to resources and stabilizing Mound 7 to protect the structure from further deterioration.	Yes. Trails would be modified, lessening impacts to resources and Mound 7 would be completely covered, protecting the structure from further deterioration.
Increase visitor safety	No	Yes. The trail modifications would better define the trails, reducing use of uneven social trails and potential conflicts with rattlesnakes. At Mound 7, modifications would include the addition of railings around openings and the backfilling would reduce fall heights.	Yes. The trail modification would meet objectives for the same reasons as Alternative B. At Mound 7, the complete backfilling of the site would remove openings thereby reducing fall hazards.
Enhance visitor enjoyment	No. Some visitors would continue to be restricted from accessing sites.	Yes. The trail modifications would allow better access to the units, and the partial backfilling of Mound 7 would allow interpretation of the structural outlines and significant visible features that would remain exposed.	Yes, by allowing better access to the units. However, the completed backfilling of Mound 7 would reduce visitor opportunities by not allowing interpretation of the structural outlines and significant visible features, which would no longer be exposed.
Make trails compliant with ADA requirements	No. Trails would not be modified to meet ADA requirements.	Yes. Trails would be modified to meet ADA requirements.	Same as Alternative B.

Table 2 summarizes the anticipated environmental impacts for Alternatives A, B, and C. Only those impact topics that have been carried forward for further analysis are included in this table. The *Environmental Consequences* chapter provides a more detailed explanation of these impacts.

Table 2 – Environmental Impact Summary by Alternative

Impact Topic	Alternative A – No Action	Alternative B – Preferred Alternative	Alternative C
Soils	Without trail modifications or backfilling at Mound 7, the impact on soils would be long-term and adverse, current social trails would likely expand and Mound 7 would continue to deteriorate, causing increased soil erosion, loss, and compaction to a minor to moderate degree.	Hardening of existing trails and construction of the new trail segments under Alternative B would result in the disturbance of soils during construction; however, the reduction in maintenance activities would have an overall, negligible, adverse effect to soils. The partial backfilling of Mound 7 would result in some soil disturbance during the backfilling; however, the reduction in maintenance activities would have an overall, moderate, beneficial effect to soils.	Impacts to soils under Alternative C would be similar to those for Alternative B; negligible adverse effects on soils due to trail modifications and negligible, adverse effects on soils due to the amount of soil required for complete backfilling of Mound 7.
Vegetation	The impact to vegetation would be long-term, minor, and adverse because of continued erosion and use of social trails, causing increased vegetation disturbance.	Hardening of existing trails and construction of the new trail segments under Alternative B would result in the disturbance of vegetation during construction; however, the reduction in erosion and maintenance activities would have an overall, negligible to minor,	Impacts on vegetation under Alternative C would be the same as those for Alternative B; long-term, negligible to minor adverse effects due to a reduction in erosion and maintenance activities. The complete backfilling of Mound 7 would have negligible, adverse

Impact Topic	Alternative A – No Action	Alternative B – Preferred Alternative	Alternative C
		adverse effect on vegetation.	impacts due to the disturbance of vegetation from the borrow area and to any vegetation that would be covered during backfilling operations.
Archeological Resources	The impacts to archeological resources would be long-term, minor, and adverse because of continued erosion, creation of social trails, and deterioration of Mound 7.	Modifications to the trail system would have long-term, moderate, beneficial effects due to a reduction in trampling, compaction, gravel erosion, and scavenging. The partial backfilling of Mound 7 would have long-term, moderate and beneficial effects due to targeting the most extreme deterioration, decreasing the amount of exposed masonry, and decreasing the maintenance required for site protection.	Overall, impacts from this alternative would be long-term, moderate, and beneficial due to preventing access to Mound 7 and better defining the trails, which would reduce trampling, compaction, gravel erosion, and scavenging.
Cultural Landscapes	The impacts to cultural landscapes would be long-term, minor, and adverse because of continued erosion, creation of social trails, and deterioration of Mound 7.	Modifications to the trail system and Mound 7 would have long-term minor, adverse effects due to changes in the visual setting, including the addition of trails and railings.	Overall, impacts from this alternative would be long-term, minor, and adverse due to changing the visual setting by adding trails and railings.
Ethnographic Resources	Impacts to ethnographic resources would be long-term, minor, and adverse because of access challenges and continued erosion.	Construction activities associated with trail modifications and partial backfilling of Mound 7 would have short-term, minor, and adverse effects due to access restriction and increased noise and dust.	Overall, impacts from this alternative would be short-term, minor, and adverse due to construction activities, access restrictions, and increased noise and dust.
Visitor Use and Experience	This alternative would have no effect on current visitor experience; however, in the long-term, visitors would continue to experience access difficulties and the potential loss of original fabric at Mound 7, which may lead to impacts to visitor safety, the visual setting, and visitor enjoyment. These impacts are expected to be long-term, negligible to moderate, and adverse.	Modifications to the trail system would have long-term, moderate, and beneficial effects due to improving access for all visitors and increasing safety. The partial backfilling of Mound 7 would have long-term, minor to moderate and beneficial effects due to stabilizing the structure while leaving it partially exposed for interpretation. Construction of the new trail segments would have short-term, minor, adverse effects to visitors from noise, dust, and disruption of solitude.	Overall, impacts from this alternative would be long-term, moderate, and adverse due to completely backfilling Mound 7, but long-term, moderate and beneficial for visitor safety and access. Construction of the new trail segments would have short-term, minor, adverse effects to visitors from noise, dust, and disruption of solitude.
Park Operations	There would be no change in current park operations. Given the difficulty keeping up with maintenance on the trails and at Mound 7, the workload for park employees would continue to increase as resources deteriorate, causing a long-term, minor, adverse effect on park operations.	Implementation of this alternative would decrease overall maintenance requirements. Overall, impacts would be long-term, moderate, and beneficial.	Implementation of this alternative would decrease overall maintenance requirements at the units. Overall, impacts would be long-term, moderate, and beneficial.

Identification of the Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that “[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

Alternative A – No Action, only minimally meets the above six evaluation factors because it would not promote minimizing impacts to Monument resources that result from the current trail network and the exposure of Mound 7. Continued deterioration of Mound 7 is causing loss of structural integrity. The trail network would continue to pose accessibility issues and a potential safety risk. Therefore, Alternative A does not meet the objectives to provide safe and esthetically pleasing surroundings (criterion 2) without environmental degradation (criterion 3) and preservation of cultural resources (criterion 4).

Alternative B is the environmentally preferred alternative because it best addresses these six evaluation factors. Alternative B better meets these objectives than Alternative A primarily because this alternative would modify existing trails and create new trail segments, thereby increasing visitor accessibility to the units. By doing so, damage to vegetation, soils, and cultural resources would be reduced (criterion 3), and visitor safety and accessibility would be increased (criterion 2). By partially backfilling Mound 7, this alternative strengthens resource preservation while enhancing opportunities for visitor access and education/experience (criterion 5), unlike Alternative C. Therefore, Alternative B better meets the objectives to minimize resource damage and provide a wide range of beneficial uses without environmental degradation for succeeding generations.

Alternative C meets the same criteria for trail modification as Alternative B (criteria 2 and 3). However, the complete backfilling of Mound 7 would reduce visitor access and opportunity of interpretation. Therefore, Alternative C does not meet the objective to provide for a balance between resource protection and visitor use (criterion 5).

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any new alternatives, other than those described and evaluated in this document. Because it meets the purpose and need for the project, the project objectives, and is the environmentally preferred alternative, Alternative B is recommended as the National Park Service Preferred Alternative.

ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the proposed project. Topics analyzed in this chapter include soils, vegetation, archeological resources, cultural landscapes, ethnographic resources, visitor use and experience, and park operations. All remaining impact topics were dismissed as discussed in Chapter 1 *Purpose and Need*. Also contained in Chapter 1 are descriptions of the affected environment for the resource topics included in this chapter. Direct, indirect, and cumulative effects, as well as impairment are analyzed for each resource topic carried forward. Potential impacts are described in terms of type, context, duration, and intensity. General definitions are defined as follows, while more specific impact thresholds are given for each resource at the beginning of each resource section.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
 - Beneficial**: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
 - Adverse**: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
 - Direct**: An effect that is caused by an action and occurs in the same time and place.
 - Indirect**: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact would occur. Are the effects site-specific, local, regional, or even broader?
- **Duration** describes the length of time an effect would occur, either short-term or long-term:
 - Short-term** impacts generally last only as long as construction, and the resources resume their pre-construction conditions following construction.
 - Long-term** impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in this Environmental Assessment.

Cumulative Effects: The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all the alternatives carried forward for analysis.

Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Salinas Pueblo Missions National Monument and, if applicable, the surrounding region. The geographic scope for this analysis includes elements within the Monument's boundaries, as well as actions outside the Monument on adjacent lands. No activities outside the Monument were identified for the cumulative impact analysis.

Following are the actions that were considered particularly important for the purpose of conducting the cumulative effects analysis.

- Fire management activities outlined in the approved Fire Management Plan expected to begin in Summer 2007.
- Activities required for cyclic stabilization of the missions; and routine maintenance.
- Visitor use activities, including developing social trails and trampling associated with walking off established trails.

Impairment: *National Park Service's Management Policies 2001* require analysis of potential effects to determine whether or not actions would impair park resources (NPS 2000a). The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the 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 of the affected resources and values.

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the enabling legislation or proclamation of the park; 2) key to the natural or cultural integrity of the park; or 3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on impairment is made in the Conclusion section for each of the resource related topics carried forward in this chapter.

Soils

Intensity Level Definitions

Analysis of the potential impacts to soils was derived from the available soils information and the Monument staff's past observations of the effects on soils from both visitor use and construction activities. The thresholds for this impact assessment are as follows:

- | | |
|--------------------|---|
| Negligible: | The impact is at the lowest levels of detection and causes very little or no physical disturbance/removal, compaction, or unnatural erosion, when compared with current conditions. |
| Minor: | The impact is slight but detectable in some areas, with few perceptible effects of physical disturbance/removal, compaction, or unnatural erosion of soils. |
| Moderate: | The impact is readily apparent in some areas and has measurable effects of physical disturbance/removal, compaction, or unnatural erosion of soils. |

- Major:** The impact is readily apparent in several areas and has severe effects of physical disturbance/removal, compaction, or unnatural erosion of soils.
- Duration:** Short-term - recovers in less than 3 years.
Long-term - more than 3 years to recover.

Impacts of Alternative A – No Action

Under this alternative, there would be no modifications to the existing trail network, no new trail segments would be constructed, and no backfilling activities at Mound 7 would occur. Without construction activities, soils would not be impacted because no ground disturbance would occur.

However, soils would be disturbed through continued erosion and use of social trails. Mound 7 would continue to deteriorate at an accelerated rate, losing its original fabric. This would be a long-term, minor to moderate, adverse effect on soils as they erode and are carried to lower elevations by wind, storm events, and continued trail use. The potential for loss of cultural resources as a result of the erosion would also result in long-term, minor to moderate adverse effect on soils.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect soils in the future. Potential impacts include continued soil compaction, increased erosion and soil loss. When combined with other past, present, and foreseeable future actions that would result in impacts on soils, this alternative would contribute a negligible amount of soil loss to the geographic area of this analysis.

Conclusion: Without trail modifications or backfilling at Mound 7, the impact on soils would be long-term and adverse, current social trails would likely expand and Mound 7 would continue to deteriorate, causing increased soil erosion, loss, and compaction to a minor to moderate degree. Cumulatively, this alternative would contribute a negligible amount of soil loss when combined with other ground-disturbing activities in the area, including fire management and routine maintenance. Because the impacts would be less than major, there would be no impairment on soils.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Any construction activities under this alternative, including the hardening of existing trails and development of new trail segments, would result in ground disturbance, thereby impacting soils. However, all construction activities would be done above grade, without cuts, using local fill. The existing social trails in the area would either be hardened, and included in the trail network, or be rehabilitated. Overall, the trail modifications would help decrease erosion by no longer using gravel and providing better defined trails to limit social trails. Less trail maintenance would be required, further reducing impacts on soils due to compaction from maintenance activities. Therefore, impacts to soils would be less than under Alternative A, with long-term, negligible, adverse effects.

The partial backfilling of Mound 7 would prevent further deterioration of the site and would protect the original fabric of the structure, however some soil disturbance would occur during backfilling operations. The fill would be from a local source. In addition, less maintenance at Mound 7 would be required, further reducing the impacts on soils due to compaction from maintenance activities. Therefore, impacts on soils due to backfilling Mound 7 are long-term, moderate, and beneficial.

Cumulative Impacts: Cumulative impacts to soils under this alternative would be similar to those described under Alternative A. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a negligible amount of soil loss to the geographic area of this analysis.

Conclusion: Hardening of existing trails and construction of the new trail segments under Alternative B would result in the disturbance of soils during construction; however, the reduction in maintenance activities would have an overall, negligible, adverse effect to soils. The partial backfilling of Mound 7 would result in some soil disturbance during the backfilling; however, the reduction in maintenance activities would have an overall, moderate, beneficial effect to soils. Cumulatively, this alternative would contribute a negligible amount of soil loss when combined with other ground-disturbing activities in the greater area. Because impacts would be less than major, there would be no impairment to soils.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

The overall impacts to soils under Alternative C would be the same as those for Alternative B, negligible and adverse; however, since no new trail would be constructed at Abo, less soil would be impacted. The complete backfilling of Mound 7 would require the use of more soil than under Alternative B; therefore, the impacts to soils would be short- term, negligible and adverse.

Cumulative Impacts: Cumulative impacts to soils under this alternative would be similar to those described under Alternatives A and B. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a negligible amount of soil loss to the geographic area of this analysis.

Conclusion: Impacts to soils under Alternative C would be similar to those for Alternative B; negligible adverse effects on soils due to trail modifications and negligible, adverse effects on soils due to the amount of soil required for complete backfilling of Mound 7. Because impacts would be less than major, there would be no impairment to soils.

Vegetation

Intensity Level Definitions

All available information on known vegetation in the Monument was compiled. Analysis of the potential impacts to vegetation was derived from the available vegetation information and the Monument staff's past observations of the effects on vegetation from both visitor use and construction activities. The thresholds for this impact assessment are as follows:

- Negligible:** The impact could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.
- Minor:** The impact could result in a change to a population or individuals of a species or a resource. The change would be small and localized and of little consequence.
- Moderate:** The impact would result in some change to a population or individuals of a species or resource. The change would be measurable and of consequence to the species or resource but localized.
- Major:** The impact would have a noticeable change to a population or individuals of a species or resource. The change would be measurable and result in a severely adverse or substantial beneficial impact, and possible permanent consequence, upon the species or resource.
- Duration:** Short-term - recovers in less than 3 years.
Long-term - more than 3 years to recover.

Impacts of Alternative A – No Action

Under this alternative, there would be no modifications to the existing trail network, no new trail segments would be constructed, and no backfilling activities at Mound 7 would occur. Without construction activities, vegetation would not be impacted because no ground disturbance would occur.

However, vegetation would be disturbed through continued erosion and use of social trails. Use of social trails would result in trampling of vegetation and soil compaction, which hinders root growth, at each unit. Continued erosion of the trails would impact vegetation as runoff could damage roots and remove stabilizing soils. This would be a long-term, minor, adverse effect on vegetation.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect vegetation in the future. Potential impacts include continued trampling of vegetation, increased erosion, and soil loss. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would contribute a negligible amount of vegetation loss to the geographic area of this analysis.

Conclusion: The impact to vegetation would be long-term, minor, and adverse because of continued erosion and use of social trails, causing increased vegetation disturbance. Cumulatively, this alternative would contribute a negligible amount of vegetation loss and disturbance when combined with other ground-disturbing activities in the area of analysis. Because the impacts would be less than major, there would be no impairment to vegetation.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Any construction activities under this alternative, including the hardening of existing trails and development of new trail segments, would result in ground disturbance, thereby impacting vegetation. Construction activities may remove or trample vegetation in a localized area. Well-defined construction limits would help minimize the amount of vegetation loss. Overall, the trails would be better defined, decreasing the potential for the creation of social trails. The hard-surfacing of the trails would help decrease erosion and maintenance, which decreases the potential for runoff damage and vegetation trampling. Therefore, impacts to vegetation would be less than under Alternative A, with long-term, negligible to minor, adverse effects. The partial backfilling of Mound 7 would have negligible, adverse impacts due to the disturbance of vegetation from the borrow area and to any vegetation that would be covered during backfilling operations.

Cumulative Impacts: Cumulative impacts to vegetation under this alternative would be similar to those described under Alternative A. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would contribute a negligible amount of vegetation loss to the geographic area of this analysis.

Conclusion: Hardening of existing trails and construction of the new trail segments under Alternative B would result in the disturbance of vegetation during construction; however, the reduction in erosion and maintenance activities would have an overall, negligible to minor, adverse effect on vegetation. Cumulatively, this alternative would contribute a negligible amount of vegetation loss when combined with other ground-disturbing activities in the area of analysis. Because impacts would be less than major, there would be no impairment to vegetation.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

There would be no construction of a new trail segment at Abo; therefore, impacts to vegetation would be slightly less than under Alternative B. However, overall impacts to vegetation under Alternative C would be the same as those for Alternative B. The complete backfilling of Mound 7 would have negligible, adverse impacts due to the disturbance of vegetation from the borrow area and to any vegetation that would be covered during backfilling operations.

Cumulative Impacts: Cumulative impacts on vegetation under this alternative would be similar to those described under Alternatives A and B. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would contribute a negligible amount of vegetation loss to the geographic area of this analysis.

Conclusion: Impacts on vegetation under Alternative C would be the same as those for Alternative B; long-term, negligible to minor adverse effects due to a reduction in erosion and maintenance activities. The complete backfilling of Mound 7 would have negligible, adverse impacts due to the disturbance of vegetation from the borrow area and to any vegetation that would be covered during backfilling operations. Cumulatively, this alternative would contribute a negligible amount of vegetation loss when combined with other ground-disturbing activities in the area of analysis. Because impacts would be less than major, there would be no impairment to vegetation.

Archeological Resources

Intensity Level Definitions

Section 106 of the National Historic Preservation Act (NHPA) requires a federal agency to take into account the effects of its undertakings on properties included in, eligible for inclusion in, or potentially eligible for inclusion in the National Register of Historic Places (NRHP), and afford the following a reasonable opportunity to comment on such undertakings: the State Historic Preservation Officer (SHPO), affiliated American Indian tribes and, as appropriate, the Advisory Council on Historic Preservation (ACHP), individuals and organizations with a demonstrated interest in the undertaking, and the general public.

In accordance with the ACHP's regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by (1) determining the area of potential effects (APE); (2) identifying cultural resources present in the APE that are either listed in or eligible to be listed in the NRHP (categorized as "historic properties"); (3) applying the criteria of adverse effects to affected historic properties; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the ACHP's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected, National Register eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register; e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the Preferred Alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact; e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

Definitions for levels of impacts to Archaeological Resources are as follows:

Negligible: Impact is at the lowest level of detection – barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact: Disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact: Maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact: Disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the Memorandum of Agreement (MOA) to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact: Stabilization of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact: Disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute an MOA in accordance with 36 CFR 800.6(b).

Beneficial impact: Active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Duration: Long-term – because most cultural resources are non-renewable, any effects on archaeological, historic, or ethnographic resources, and on most elements of a cultural landscape, would be long-term.

Impacts of Alternative A – No Action

Under this alternative, there would be no modifications to the existing trail network, no new trail segments would be constructed, and no backfilling activities at Mound 7 would occur. Without construction activities, archeological resources would not be impacted because no ground disturbance would occur.

However, archeological resources would be disturbed through continued erosion, trampling due to the use of social trails, and impacts to in-situ wall stones. This would be a long-term, minor, adverse effect to archeological resources. Mound 7 would continue to deteriorate causing loss of integrity and potential disturbance of intact subsurface deposits.

The New Mexico State Historic Preservation Officer (NMSHPO) concurred with a *historic properties effected; no adverse effect* determination for this alternative on July 18, 2006.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect archeological resources in the future. Potential impacts include trampling on or uncovering archeological resources. When combined with other past, present, and foreseeable future actions that would result in impacts to archeological resources, this alternative would have negligible effects.

Conclusion: The impacts to archeological resources would be long-term, minor, and adverse because of continued erosion, creation of social trails, and deterioration of Mound 7. Cumulatively, this alternative would have negligible impacts to archeological resources. Because impacts would be less than major, there would be no impairment of archeological resources.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, existing trails would be hard-surfaced, new trails segments would be constructed, and social trails would be eliminated or hard-surfaced, all resulting in ground disturbance. Impacts to archeological resources associated with trampling, compaction, gravel erosion, and scavenging would be reduced as a result of better defining and hard-surfacing the trails. Impacts would be long-term, moderate, and beneficial. The partial backfilling of Mound 7 would target the areas of most extreme deterioration, would decrease the amount of exposed masonry, and would decrease the amount of maintenance required to protect the site. Therefore, impacts would be long-term, moderate, and beneficial.

The NMSHPO concurred with a *historic properties effected; no adverse effect* determination for this alternative on July 18, 2006.

Cumulative Impacts: Cumulative impacts to archeological resources under this alternative would be similar to those described under Alternative A. When combined with other past, present, and foreseeable future actions that would result in impacts to archeological resources, this alternative would have negligible cumulative effects.

Conclusion: Modifications to the trail system would have long-term, moderate, beneficial effects due to a reduction in trampling, compaction, gravel erosion, and scavenging. The partial backfilling of Mound 7 would have long-term, moderate and beneficial effects due to targeting the most extreme deterioration, decreasing the amount of exposed masonry, and decreasing the maintenance required for site protection. Cumulatively, this alternative would have negligible impacts to archeological resources. Because impacts would be less than major, there would be no impairment of archeological resources.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

Under this alternative, impacts to the trail system would be the same as those described for Alternative B; long-term, moderate, and beneficial. However, there would be less ground disturbance with this alternative since no new trail would be constructed at Abo. Mound 7 would be completely backfilled under this alternative. As a result, visitors and staff would no longer have access to the site and there would be no opportunity for deterioration and scavenging, no exposed masonry, and no maintenance would be required at the site. Therefore, impacts would be long-term, moderate and beneficial. The NMSHPO did not provide a determination for this alternative. If Alternative C were selected, additional Section 106 compliance would be required.

Cumulative Impacts: Cumulative impacts to archeological resources under this alternative would be similar to those described under Alternatives A and B. When combined with other past, present, and foreseeable future actions that would result in impacts to archeological resources, this alternative would have negligible cumulative effects.

Conclusion: Overall, impacts from this alternative would be long-term, moderate, and beneficial due to preventing access to Mound 7 and better defining the trails, which would reduce trampling, compaction, gravel erosion, and scavenging. Cumulatively, this alternative would have negligible impacts to archeological resources. Because impacts would be less than major, there would be no impairment of archeological resources.

Cultural Landscapes

Intensity Level Definitions

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

In order for a cultural landscape to be listed in the National Register, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). The landscape must also have integrity of those patterns and features – spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects – necessary to convey its significance (*Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*).

Definitions for levels of impacts to Cultural Landscapes are as follows:

Negligible: Impact(s) is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be *no adverse effect*.

Minor: Adverse impact: Alteration of a pattern(s) or feature(s) of the landscape would not diminish the overall integrity of the landscape. The determination of effect for Section 106 would be *no adverse effect*.

Beneficial impact: Preservation of landscape patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.

Moderate: Adverse impact: Alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be *adverse effect*. A memorandum of agreement is executed among the National Park Service and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.

Beneficial impact: Rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.

Major: Adverse impact: Alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the

National Park Service and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute an MOA in accordance with 36 CFR 800.6(b).

Beneficial impact: Restoration of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.

Duration: Short-term – treatment effects on the natural elements of a cultural landscape may be comparatively short-term (e.g., 3 to 5 years until new vegetation grows or historic plantings are restored, etc.).

Long-term – because most cultural resources are non-renewable, effects on most elements of a cultural landscape would be long-term.

Impacts of Alternative A – No Action

Under this alternative, there would be no modifications to the existing trail network, no new trail segments would be constructed, and no backfilling activities at Mound 7 would occur. Without construction activities, cultural landscapes would not be impacted because no construction would occur.

However, cultural landscapes would be disturbed through continued erosion, creation of social trails, and impacts the Euro-American Built Environment and the Pre-Euro American Built Environment. Mound 7 would also continue to deteriorate. Overall, this would be a long-term, minor, adverse effect to cultural landscapes.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect cultural landscapes in the future. Potential impacts include trampling and visual changes from fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to cultural landscapes, this alternative would have negligible effects.

Conclusion: The impacts to cultural landscapes would be long-term, minor, and adverse because of continued erosion, creation of social trails, and deterioration of Mound 7. Cumulatively, this alternative would have negligible impacts to cultural landscapes. Because impacts would be less than major, there would be no impairment of cultural landscapes.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, existing trails would be hard-surfaced, new trails segments would be constructed, and social trails would be eliminated or hard-surfaced. The new trails segments and the addition of railings at Mound 7 would result in visual changes within the cultural landscape. Mound 7 would be partially backfilled under this alternative. However, the cultural landscape would not be impacted. Therefore, impacts would be long-term, minor, and adverse.

Cumulative Impacts: Cumulative impacts to cultural landscapes under this alternative would be similar to those described under Alternative A. When combined with other past, present, and foreseeable future actions that would result in impacts to cultural landscapes, this alternative would have negligible effects.

Conclusion: Modifications to the trail system and Mound 7 would have long-term minor, adverse effects due to changes in the visual setting, including the addition of trails and railings. Cumulatively, this alternative would have negligible impacts to cultural landscapes. Because impacts would be less than major, there would be no impairment of cultural landscapes.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

Under this alternative, impacts to the trail system would be the same as those described for Alternative B; long-term, minor, and adverse. However there would be less ground disturbance with this alternative since no new trail would be constructed at Abo. Mound 7 would be completely backfilled under this alternative. Although Mound 7 would no longer be visible, the cultural landscape would not be impacted. Therefore, impacts would be long-term, minor, and adverse.

Cumulative Impacts: Cumulative impacts to cultural landscapes under this alternative would be similar to those described under Alternatives A and B. When combined with other past, present, and foreseeable future actions that would result in impacts to cultural landscapes, this alternative would have negligible effects.

Conclusion: Overall, impacts from this alternative would be long-term, minor, and adverse due to changing the visual setting by adding trails and railings. Cumulatively, this alternative would have negligible impacts to cultural landscapes. Because impacts would be less than major, there would be no impairment of cultural landscapes.

Ethnographic Resources

Intensity Level Definitions

Certain important questions about human culture and history can only be answered by gathering information about the cultural content and context of cultural resources. Questions about contemporary peoples or groups, their identity, and heritage have the potential to be addressed through ethnographic resources. As defined by the National Park Service, an ethnographic resource is a site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. Some places of traditional cultural use may be eligible for inclusion in the National Register of Historic Places as traditional cultural properties (TCPs) because of their association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community (*National Register Bulletin, Guidelines for Evaluating and Documenting Traditional Cultural Properties*). For purposes of analyzing potential impacts to ethnographic resources, the thresholds of change for the intensity of an impact are defined below. Definitions for levels of impacts to Ethnographic Resources are as follows:

Negligible: Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Minor: Adverse impact: impact(s) would be slight but noticeable, and would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for Section 106 would be *no adverse effect*.

Beneficial impact: would allow access to and/or accommodate a group's traditional practices or beliefs. The determination of effect on Traditional Cultural Properties for Section 106 would be *no adverse effect*.

Moderate: Adverse impact: impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. The determination of effect on Traditional Cultural Properties

(ethnographic resources eligible to be listed in the National Register) for Section 106 would be *adverse effect*.

Beneficial impact: would facilitate traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for Section 106 would be *no adverse effect*.

Major: Adverse impact: impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that the survival of a group's practices and/or beliefs would be jeopardized. The determination of effect on Traditional Cultural Properties (ethnographic resources eligible to be listed in the National Register) for Section 106 would be *adverse effect*.

Beneficial impact: would encourage traditional access and/or accommodate a group's practices or beliefs. The determination of effect on Traditional Cultural Properties for Section 106 would be *no adverse effect*.

Duration: Long-term – because most cultural resources are non-renewable, any effects on ethnographic resources would be long-term.

Impacts of Alternative A – No Action

Under this alternative, there would be no modifications to the existing trail network, no new trail segments would be constructed, and no backfilling activities at Mound 7 would occur. Without construction activities, ethnographic resources would not be impacted because no construction would occur. However, ethnographic resources would be disturbed due to continued access challenges and continued erosion. The churches are used for local events, weddings, and concerts, and access issues prevent some people from participating. Overall, this would be a long-term, minor, adverse effect to ethnographic resources.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect ethnographic resources in the future. Potential impacts include trail closures for maintenance and visual and air quality impacts associated with fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to ethnographic resources, this alternative would have negligible cumulative effects.

Conclusion: Impacts to ethnographic resources would be long-term, minor, and adverse because of access challenges and continued erosion. Cumulatively, this alternative would have negligible impacts to ethnographic resources. Because impacts would be less than major, there would be no impairment of ethnographic resources.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, existing trails would be hard-surfaced, new trails segments would be constructed, and social trails would be eliminated or hard-surfaced. In addition, railings would be installed and trails would be modified at Mound 7. These changes would not impact ethnographic resources. However, during construction, impacts would be associated with increased noise and dust, and the access to and use of the churches may be restricted. Mitigation measures would be applied to reduce this level of disruption, including using non-mechanized (quieter) tools; working at times of lower visitor use; and fencing off construction zones to make the area safer for visitors. Therefore, with the mitigation measures, impacts would be short-term, minor, and adverse, until construction activities cease.

Cumulative Impacts: Cumulative impacts to ethnographic resources under this alternative would be similar to those described under Alternative A. When combined with other past, present, and foreseeable future

actions that would result in impacts to ethnographic resources, this alternative would have negligible cumulative effects.

Conclusion: Construction activities associated with trail modifications and partial backfilling of Mound 7 would have short-term, minor, and adverse effects due to access restriction and increased noise and dust. Cumulatively, this alternative would have negligible impacts to ethnographic resources. Because impacts would be less than major, there would be no impairment of ethnographic resources.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

Although there would be less impact to the ground surface since no new trail would be constructed at Abo and the complete backfilling of Mound 7 would cause slightly longer construction impacts, overall impacts to ethnographic resources would be the same as those described for Alternative B, short-term, minor and adverse due to construction activities.

Cumulative Impacts: Cumulative impacts to ethnographic resources under this alternative would be similar to those described under Alternatives A and B. When combined with other past, present, and foreseeable future actions that would result in impacts to ethnographic resources, this alternative would have negligible effects.

Conclusion: Overall, impacts from this alternative would be short-term, minor, and adverse due to construction activities, access restrictions, and increased noise and dust. Cumulatively, this alternative would have negligible impacts to ethnographic resources. Because impacts would be less than major, there would be no impairment of ethnographic resources.

Visitor Use and Experience

Intensity Level Definitions

The methodology used for assessing impacts to visitor use and experience is based on how modifications to the existing trail network and modifications to Mound 7 would affect visitors, including safety considerations and maintaining the resource for future generations to enjoy. The impact on the ability of visitors to experience a full range of park resources was analyzed by Monument staff's observations about visitors and accessibility to resources. The thresholds for this impact assessment are as follows:

Negligible: Visitors would not be affected, or changes in visitor use and/or experience would be below or at the level of detection. Visitors would not likely be aware of the effects associated with the alternative.

Minor: Changes in visitor use and/or experience would be detectable, although the changes would be slight. Visitors would be aware of the effects associated with the alternative, but the effects would be slight.

Moderate: Changes in visitor use and/or experience would be readily apparent. Visitors would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.

Major: Changes in visitor use and/or experience would be readily apparent and have important consequences. Visitors would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Duration: Short-term – occurs only during treatment.
Long-term – occurs after the treatment.

Impacts of Alternative A – No Action

Under this alternative, there would be no changes to the trail system. Visitors would continue to face access challenges and safety issues due to the uneven gravel trail surface. The trails would not be well defined and visitors would continue to use and create social trails. Use of social trails would continue to pose a risk to visitor safety. Without any construction activities, there would be no construction-related impacts such as noise and dust, and the visitor experience would remain the same. The existence of social trails and gravel migrating off the trails would also contribute to visual impacts. The impacts on visitor use and experience would be long-term, moderate, and adverse.

Mound 7 would not be stabilized under this alternative, continuing the loss of original fabric. In addition, visitor safety would continue to be a concern due to poorly defined trails along the top of the mound and the many openings, creating a fall hazard. The impact to visitor use and experience would be long-term, negligible, and adverse.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect visitor use in the future. Potential impacts include trail closures and visual and air quality impacts associated with fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to visitor use and experience, this alternative would have negligible cumulative impacts on visitors.

Conclusion: This alternative would have no effect on current visitor experience; however, in the long-term, visitors would continue to experience access difficulties and the potential loss of original fabric at Mound 7, which may lead to impacts to visitor safety, the visual setting, and visitor enjoyment. These impacts are expected to be long-term, negligible to moderate, and adverse. Cumulatively, this alternative would have negligible impacts on visitor use and experience.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, the trails at all three units would be hard-surfaced and new trail segments would be constructed to restrict use of social trails. This would increase visitor opportunities and improve visitor enjoyment by allowing better access to the units. Visitor safety would increase due to better defining the trails, and by removing social trails; potential conflicts with rattlesnakes would also be reduced. Therefore, impacts to visitor use and experience would be long-term, moderate, and beneficial.

The partial backfilling of Mound 7 would also increase visitor experience and enjoyment by providing better access to the site while limiting future damage to the site. The site would be protected from continued deterioration while assuring that the structural outlines and significant visible features remain exposed for interpretation. In addition, visitor safety would increase due to reduced fall heights and the installation of railings around some openings. Therefore, impacts to visitor use and experience would be long-term, minor to moderate, and beneficial.

Construction activities would increase noise and disrupt the area's solitude for the short-term until such activities cease. Mitigation measures would be applied to reduce this level of disruption, including using non-mechanized (quieter) tools; working at times of lower visitor use; and fencing off construction zones to make the area safer to visitors. With the mitigation measures, construction activities are expected to have short-term, minor, adverse effects on visitors in the localized area.

Cumulative Impacts: The overall cumulative effect to visitor use and experience would be the same as described under Alternative A. Potential impacts include trail closures and visual and air quality impacts associated with fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to visitor use and experience, this alternative would have negligible cumulative impacts on visitors.

Conclusion: Modifications to the trail system would have long-term, moderate, and beneficial effects due to improving access for all visitors and increasing safety. The partial backfilling of Mound 7 would have long-term, minor to moderate and beneficial effects due to stabilizing the structure while leaving it partially exposed for interpretation. Construction of the new trail segments would have short-term, minor, adverse effects to visitors from noise, dust, and disruption of solitude. Cumulatively, this alternative would have a negligible effect on visitor use and experience.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

Under this alternative, impacts to the trail system would be the same as those described for Alternative B; long-term, moderate, and beneficial. However there would be less ground disturbance with this alternative since no new trail would be constructed at Abo. Mound 7 would be completely backfilled under this alternative. As a result, visitor use and enjoyment would be reduced due to the loss of visual features and reduced opportunities for interpretation. Therefore, impacts to visitor use and experience would be long-term, moderate, and adverse. Safety concerns would be addressed, providing a moderate beneficial effect due to decreased fall heights.

Construction activities would increase noise and disrupt the area's solitude for the short-term until such activities cease. Mitigation measures would be applied to reduce this level of disruption, including using non-mechanized (quieter) tools; working at times of lower visitor use; and fencing off construction zones to make the area safer to visitors. With the mitigation measures, construction activities are expected to have short-term, minor, adverse effects on visitors in the localized area.

Cumulative Impacts: The overall cumulative effect to visitor use and experience would be the same as described under Alternatives A and B. Potential impacts include trail closures and visual and air quality impacts associated with fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to visitor use and experience, this alternative would have negligible cumulative impacts on visitors.

Conclusion: Overall, impacts from this alternative would be long-term, moderate, and adverse due to completely backfilling Mound 7, but long-term, moderate and beneficial for visitor safety and access. Construction of the new trail segments would have short-term, minor, adverse effects to visitors from noise, dust, and disruption of solitude. Cumulatively, this alternative would have a negligible effect on visitor use and experience.

Park Operations

Intensity Level Definitions

Implementation of a project can affect the operations of a park, such as the number of employees needed; the type of duties that need to be conducted; when/who would conduct these duties; how activities should be conducted; and administrative procedures. Park operations, for the purpose of this analysis, refers to the current staff available to adequately protect and preserve vital park resources and provide for an effective visitor experience. The discussion of impacts to park operations focuses on (1) law enforcement and any other staff available to ensure visitor and employee safety in the units, and (2) the ability of the staff to protect and preserve resources given current funding and staffing levels. Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in the *Purpose and Need* section of this document. The thresholds for this impact assessment are as follows:

Negligible: Park operations would not be affected, or the effect would be at or below the levels of detection, and would not have an appreciable effect on park operations.

- Minor:** The effect would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.
- Moderate:** The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- Major:** The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff, the public, and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, could be expensive, and their success could not be guaranteed.
- Duration** Short-term – effects lasting for the duration of the treatment action.
Long-term – effects lasting longer than the duration of the treatment action.

Impacts of Alternative A – No Action

Under this alternative, there would be no change to park operations. Monument staff would continue to maintain and patrol the units as funding and staffing levels permit. Trails would continue to deteriorate, requiring increased levels of maintenance with no increase in staff levels. Given the amount of maintenance required due to erosion and loss of trail cover, the impact on park operations staff time resulting from the attention to these trails would continue to be long-term, minor, and adverse. In addition to the trail maintenance, with no changes to park operations, impacts to maintenance at Mound 7 would also be long-term, minor, and adverse due to the staff's difficulty keeping up with the maintenance requirements.

Cumulative Impacts: Fire management activities and routine maintenance and stabilization activities would potentially affect park operations in the future. Potential impacts include increased maintenance and staffing requirements for fire management activities. When combined with other past, present, and foreseeable future actions that would result in impacts to park operations, this alternative would have a negligible impact on the park operations workload.

Conclusion: There would be no change in current park operations. Given the difficulty keeping up with maintenance on the trails and at Mound 7, the workload for park employees would continue to increase as resources deteriorate, causing a long-term, minor, adverse effect on park operations. Cumulatively, this alternative would have negligible impacts on the park operations workload because Monument staff currently maintain both the trails and Mound 7.

Impacts of Alternative B – Trail Modification and Partial Backfill of Mound 7

Under this alternative, Monument operations would not change; however, the maintenance requirements would be reduced due to the hard-surfacing of the trails and the partial backfilling of Mound 7. In addition, safety for monument staff would increase due to improved surfaces, better-defined trails, decreased fall heights, and the addition of railings around some openings on Mound 7. Therefore, impacts to Monument operations would be long-term, moderate, and beneficial.

Cumulative Impacts: The overall cumulative effect to park operations would be the same as described under Alternative A. Given the reduction in overall maintenance requirements, this alternative, when combined with other past, present, and foreseeable future actions, would have negligible cumulative impacts on the overall park operations workload.

Conclusion: Implementation of this alternative would decrease overall maintenance requirements. Overall, impacts would be long-term, moderate, and beneficial. This alternative is expected to contribute negligibly to the overall cumulative effect to park operations.

Impacts of Alternative C – Trail Modification and Complete Backfill of Mound 7

Under this alternative, impacts would be the same as those described for Alternative B; in addition, maintenance requirements would be slightly reduced at Mound 7 due to the complete backfilling of the structure. However, the overall impacts to park operations under Alternative C would be the same as those for Alternative B.

Cumulative Impacts: The overall cumulative effect to park operations would be the same as described under Alternatives A and B. Given the reduction in overall maintenance requirements, this alternative, when combined with other past, present, and foreseeable future actions, would have negligible cumulative impacts on the overall park operations workload.

Conclusion: Implementation of this alternative would decrease overall maintenance requirements at the units. Overall, impacts would be long-term, moderate, and beneficial. This alternative is expected to contribute negligibly to the overall cumulative effect to park operations.

CONSULTATION AND COORDINATION

Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from Salinas Pueblo Missions National Monument and the Intermountain Support Office. Interdisciplinary team members met on January 25, 2006 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. The team also gathered background information and discussed public outreach for the project. Over the course of the project, team members have conducted individual site visits to view and evaluate the proposed trail locations. The results of the January 2006 meeting are documented in this Environmental Assessment.

External Scoping

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to modify the existing trails at the three units and to partially backfill Mound 7 at Gran Quivira, and to generate input on the preparation of this Environmental Assessment. The scoping letter dated February 9, 2006 was mailed to 25 park neighbors in the Mountainair, New Mexico, area. Another letter dated February 9, 2006 was distributed to potentially interested Native American tribes. In addition, the scoping information was also posted on the National Park Service Planning, Environment, and Public Comment Web site (<http://parkplanning.nps.gov/>).

During the 30-day scoping period, three public comments were received. All of the comment letters were in support of the project.

List of Recipients and Public Review

This Environmental Assessment will be released for public review in August 2006. To inform the public of the availability of the Environmental Assessment, the National Park Service will publish and distribute a letter or press release to various agencies and members of the public on the National Monument's mailing list. Copies of the Environmental Assessment will be provided to interested individuals, upon request. Copies of the document will also be available for review at the Monument's visitor center and on the Internet at the National Park Service Planning, Environment, and Public Comment Web site (<http://parkplanning.nps.gov/>).

This Environmental Assessment is subject to a 30-day public comment period. During this time, the public is encouraged to submit their written comments to the National Park Service. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period and will make appropriate changes to the Environmental Assessment, as needed.

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