

**Frijoles and Alamo Headwaters  
Public Access Project**

**Environmental Assessment/  
Assessment of Effect**

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# Chapter 1

## Purpose and Need for Action

### 1.0 Introduction

Bandelier National Monument is a unit of federal land administered by the National Park Service (NPS) located on the southern portion of the Pajarito Plateau in the Jemez Mountains in north- central New Mexico. It is approximately 10 miles southwest of Los Alamos and 45 miles northwest of Santa Fe (Figure 1). Bandelier lies within the jurisdiction of Los Alamos, Sandoval, and Santa Fe counties, New Mexico. It is comprised of approximately 33,727 acres, of which 23,267 acres are designated wilderness.

Bandelier is proposing to open lands within the monument that are currently closed to public access. These lands include areas acquired in 1977, 1998, and 2000, totaling approximately 3,997 acres and are hereafter referred to as the project area (Figure 2). Of this total, approximately 1,488 acres are currently open to seasonal winter use only. The remaining 2,509 acres are closed to public access year- round. The proposed action is to formally designate all 3,997 acres open for year- round public use. This Environmental Assessment/ Assessment of Effect (EA) is being prepared to comply with the requirements of the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.) and the Council on Environmental Quality (CEQ), Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500 – 1508). In addition, this EA will comply with NPS Director’s Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making (DO- 12) (USDI National Park Service 2001), NPS Management Policies 2001 (USDI National Park Service 2000), and any other NPS procedures or instructions regarding NEPA. This EA will also be used to comply with §106 requirements of the National Historic Preservation Act of 1964 (NHPA) (16 U.S.C. 470 et seq.).

### 1.1 Background

#### 1.1.1 Significance of Bandelier National Monument

The significance of Bandelier lies in its superb combination of cultural, natural, and wilderness values. The establishing 1916 Presidential Proclamation (No. 1322: 39 Stat. 1794) for Bandelier states: “Whereas, certain prehistoric aboriginal ruins...are of unusual ethnologic, scientific, and educational interest, and it appears that the public interests would be promoted by reserving these relics of a vanished people, with as much land as may be necessary for the proper protection thereof, as a National Monument.” To recognize the wilderness values, President Gerald Ford signed legislation in October, 1976 creating the 23,267- acre Bandelier Wilderness (Public Law 94- 567).

Figure 1. Bandelier National Monument

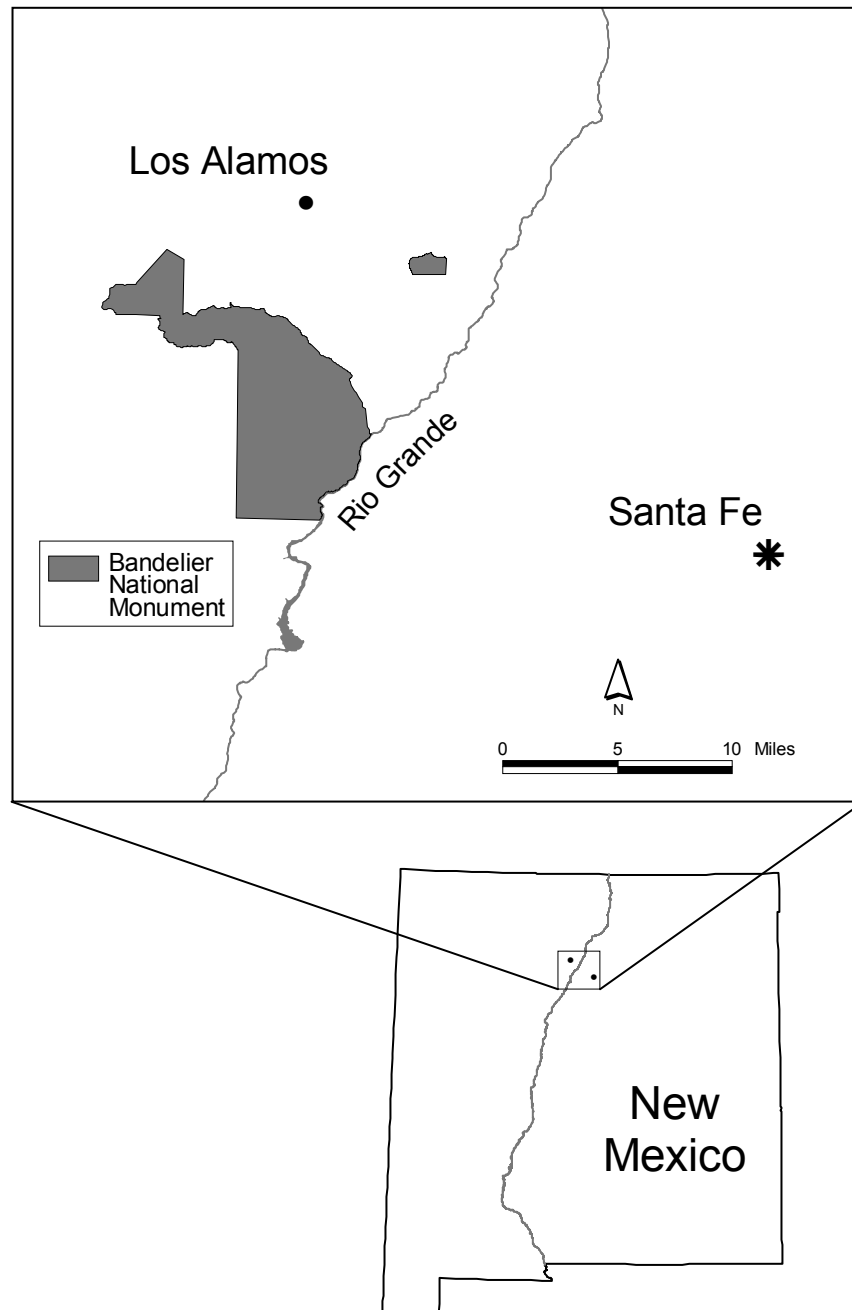


Figure 1. Bandelier National Monument.



There are seven key factors that contribute to the significance of Bandelier National Monument:

- A high concentration and wide variety of well- preserved archeological sites;
- The descendants of this prehistoric culture live in the area today and maintain their cultural and religious ties to the past through the area now encompassed by the park;
- Outstanding geological features, which are part of the Jemez volcanic field;
- The diverse ecological resources in this relatively small area support intact ecosystems, many vegetation types, associated fauna, and the Bandelier Wilderness, all of which are managed to enable the functioning of natural processes;
- Visitors experience the inspirational qualities of the past and present and the sense of solitude in an environment rich in archeological sites and wilderness values and in relatively unaltered and scenic landscape;
- Outstanding natural and cultural research opportunities resulting from a relatively high integrity of resources and degree of resource protection;
- The Civilian Conservation Corps (CCC) Historic District within Bandelier represents the largest concentration of CCC structures and furnishings in the National Park System and retains a high level of integrity.

The monument contains approximately 2,805 recorded archeological sites that span in time from the Paleoindian period (10,000 years ago) to the historic period (from 1600 to present). The monument also includes ancient hunting camps, “cavate” structures (rooms that have been carved into the soft tuff bedrock), 300- room pueblos, small farming hamlets, and the remains of historic corrals and log cabins as well as other cultural resources.

The monument’s northern boundary is situated on the rim of a large volcano (now the Valles Caldera National Preserve) that collapsed approximately one million years ago after its enormous eruption. The area is now composed of volcanic ash and lava flows that have been eroded into deep canyons separated by narrow mesas. Within the monument’s boundaries are some 33,727 acres (13,649 hectares) of rugged canyons, mesas, and mountain slopes. The monument spans an elevational gradient from the Rio Grande at 5,300 ft (1,615 meters) to the summit of Cerro Grande at 10,199 ft (3,109 meters), an altitudinal range of 4,899 ft. (1,493 meters).

The diversity of habitats created by the range of elevations, topographic aspects, climates, and soils support a variety of associated wildlife, such as elk, black bear, and mountain lion, and are populated by an equally diverse assemblage of plant life. Thus, within a single days' walk from the banks of the Rio Grande to the summit of Cerro

Grande, one traverses moist canyon bottoms, juniper grassland communities, pinyon-juniper woodlands, ponderosa pine forests, mixed conifer forests, and mountain meadows. Bandelier contains over 750 taxa of vascular plants, including many sensitive species such as the yellow lady's slipper (*Cypripedium calceolus*) and grama grass cactus (*Pediocactus papyracanthus*).

### 1.1.2 Land Acquisition History

Bandelier National Monument was originally established in 1916 with 22,352 acres. This acreage was reserved from Santa Fe National Forest lands and was administered by the U.S. Forest Service until 1932. Three subsequent presidential proclamations added additional public lands:

- No. 1991, February 25, 1932, enlarged the monument to include 4,699 additional acres of national forest lands, and directed the National Park Service to manage the monument.
- No. 3388, January 9, 1961, enlarged the monument to include 3,600 acres of land formerly administered by the Atomic Energy Commission (AEC), which had been determined to be in excess of that agency's needs and transferred to the National Park Service on December 9, 1959.
- No. 3539, May 27, 1963, enlarged the monument by 2,882 acres of land formerly administered by the AEC, which was transferred to the National Park Service on March 5, 1963. The Otowi section of 3,925 acres was excluded from Bandelier National Monument and transferred to the AEC.

Title III of Public Law 94- 578, October 21, 1976, in Section 309 authorized:

1. The acquisition of 4,234 acres of the Canada de Cochiti Grant owned by the State of New Mexico through the University of New Mexico, to become part of the monument upon acquisition by donation or exchange only. Due to the stipulations of this acquisition, this land has not yet been acquired.
2. The acquisition of 3,076 acres of privately owned land containing the headwaters of the Rito de los Frijoles, to become part of the monument upon acquisition. This land was purchased from Dunigan Enterprises, Inc., and became part of the monument on February 8, 1977.

Public Law 105- 85, November 18, 1997 authorized transfer of 4.47 acres from the Department of Energy to the Secretary of the Interior, and revised the Bandelier boundary to include the transferred land.

Public Law 105- 376, November 12, 1998, in Section 3 authorized that the boundaries of the Monument shall be modified to include approximately 935 acres of land comprised

of the Elk Meadows subdivision, the Gardner parcel, the Clark parcel, and the Baca Land & Cattle Co. lands within the Upper Alamo watershed.

The 89.77- acre parcel of the Elk Meadows subdivision was acquired on March 25, 1999. Both the Gardner (9.99 acres) and Clark (12.24 acres) parcels are still under private ownership. The Clark parcel was recently sold to another private party in late 2004. The Baca Land & Cattle Co. lands in the Upper Alamo watershed (approximately 832 acres) were acquired by the United States as part of Public Law 106- 248, Valles Caldera Preservation Act on July 25, 2000 (see below).

Public Law 106- 248, July 25, 2000 Section 104 (a) authorized the acquisition of approximately 94,761 acres of the Baca ranch, comprising the lands, facilities, and structures referred to as the Baca Location No. 1 under the Valles Caldera National Preservation Act. Upon acquisition of the Baca ranch under Section 104 (a), the Secretary of the Interior assumed administrative jurisdiction over those lands within the boundaries of the Bandelier National Monument as modified under Section 3 of Public law 105- 376 (see above).

Nearly two- thirds (approximately 2,509 acres) of these acquired lands (north of New Mexico State Highway 4 [NM 4] and west of Forest Service Road 289 [FR 289]) remain closed to public access. However, limited access is permitted in these areas for certain special uses, such as scientific research and educational and Native American traditional use activities. The remaining one- third of the acquired lands (approximately 1,488 acres), located south of NM 4, are winter only day use. This area offers winter seasonal cross country skiing, trailhead signs, and nearby parking.

## ***1.2 Purpose and Need***

### **1.2.1 Purpose**

The purpose and objective of this project is to open park lands north of NM 4 and west of FR 289 within Sandoval County that are closed to recreational public use, and designate those lands and lands south of NM 4 as year- round day use only. The project area delineated for this proposed action is shown in Figure 2.

### **1.2.2 Need**

The National Park Service Organic Act of 1916 (16 U.S.C.1.) mandates the preservation and protection of identified park resources while "...[providing] for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." National Park Service Management Policies 2001 (USDI National Park Service 2000) also states that the fundamental purpose of all parks

Figure 2. Frijoles and Alamo Headwaters Project Area

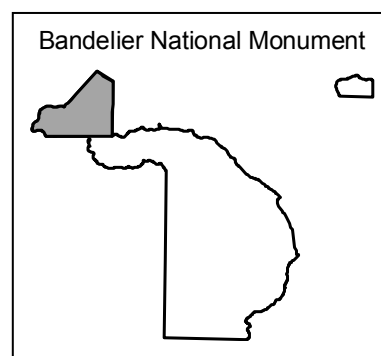
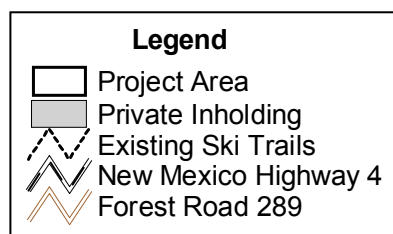
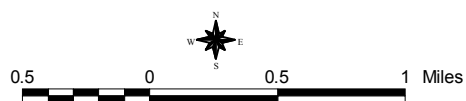
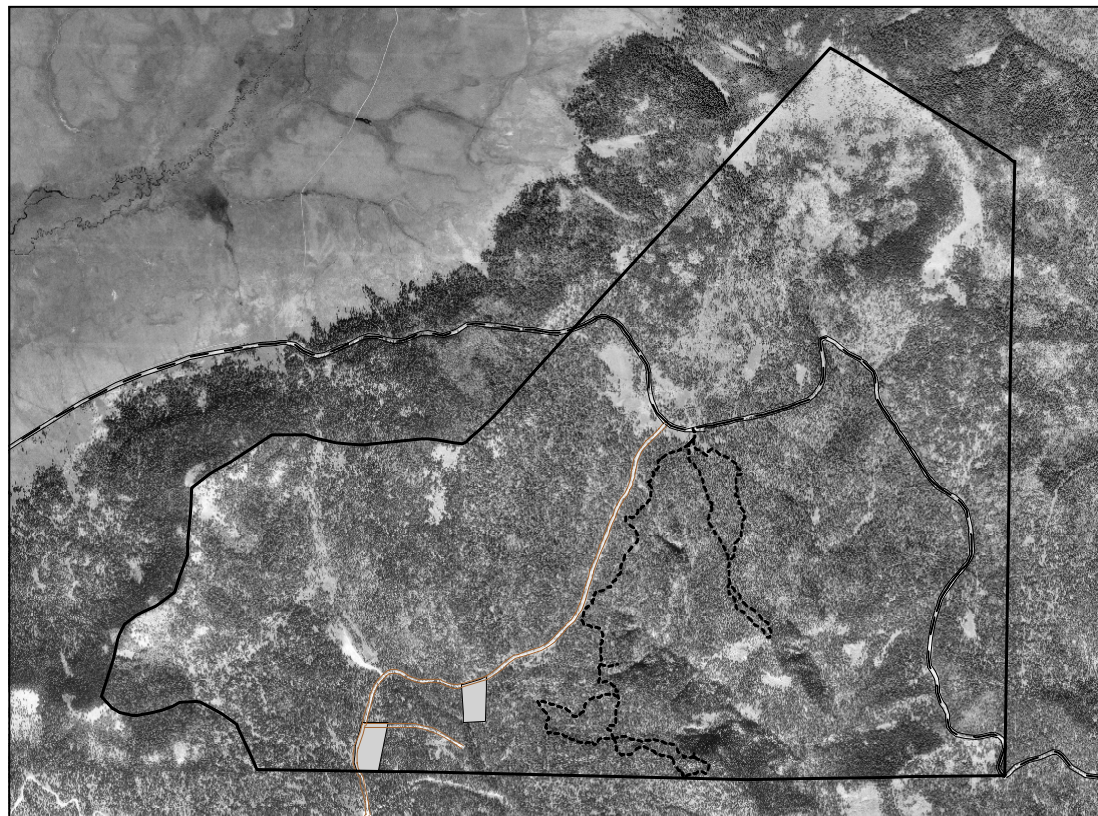


Figure 2. Frijoles and Alamo headwaters project area.

includes providing for the enjoyment of park resources and values....”The mission statement for Bandelier National Monument is “[to] provide the means for staff and the public to preserve, protect, understand and enjoy the cultural and natural resources of Bandelier...through an integrated program where management activities support naturally functioning ecosystems consistent with cultural resource preservation needs” (USDI National Park Service 1995). In addition to the above mission statement, Bandelier’s overriding resource management goal is to “provide the means and opportunity for people to study, understand, and enjoy the resources of the monument without unduly compromising the resources or ethnographic values” (USDI National Park Service 1995).

While the above mandates and policies stipulate public enjoyment of park lands, the park Superintendent has the discretionary authority to impose local restrictions, public use limits, and closures, and designate areas for specific use or activity (36 CFR 1.5). However, NPS Management Policies 2001 (USDI National Park Service 2000, Section 8.2) states that:

Any closures or restrictions...other than those imposed by law...require written determination by the superintendent that such measures are needed to:

- protect public health and safety;
- prevent unacceptable impacts to park resources or values;
- carry out scientific research;
- minimize visitor use conflicts; or
- otherwise implement management responsibilities.

The legislation for the 1977 acquisition of the Upper Frijoles watershed (P.L. 94- 578) specifically stated that the newly acquired area was to remain closed to the public for a period of five years following the sale, or until a fence could be erected to designate the new boundaries. Due to funding limitations, the fence was never built and the five year closure stipulation has since lapsed, although most of the area still remains closed to the public. In 1983, Bandelier produced the Upper Frijoles and Back Gate Development Concept Plan (DCP), which called for limited recreational development and visitor use within Upper Frijoles headwaters area. As part of the DCP, a cross country ski trail was constructed south of NM 4 as well as an associated paved parking area (Figure 2). The trail was opened to seasonal winter day use only. No other site- specific land use planning has been completed for this area, or for the subsequent Elk Meadows and Alamo headwaters acquisitions.

Since the above conditions stated in Management Policies 2001 (USDI National Park Service 2000)(Section 8.2) do not apply to these acquisitions and the five year closure

stipulation on the 1977 acquisition has lapsed, these lands must be evaluated for opening to the public for year round day use.

### **1.3 Scoping**

#### **1.3.1 Internal and External Scoping**

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment/assessment of effect. Bandelier National Monument conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by the staff at Bandelier. An interdisciplinary team (IDT) was formed early in the internal scoping process to define the purpose and need, identify potential action alternatives to address the need, determine what the likely issues and impact topics would be, and to identify the relationship, if any, of the proposed action to other planning efforts at the monument.

A scoping letter was sent out to all interested parties and agencies and press release was issued on January 14, 2005 describing the proposed action and to announce the public scoping meeting (Appendix A). The public scoping meeting was held on January 25, 2005 in Los Alamos, New Mexico. There were 31 public scoping comments received within the 30 day scoping period. These comments generally indicated the public's support for opening of the currently closed lands and the desire for designated routes to several destination points within the closed areas.

The following Pueblo Indian groups traditionally associated with the lands of Bandelier were also apprised by letter of the proposed action on January 14, 2005:

Pueblo of Cochiti	Pueblo of Jemez
Pueblo of San Felipe	Pueblo of San Ildefonso
Pueblo of Santo Domingo	Pueblo of Santa Clara
Pueblo of Zuni	Pueblo of San Juan
Eight Northern Indian Pueblo Council	

An interagency scoping meeting was held on February 24, 2005 to discuss the proposed alternatives and address interagency issues. Participants included Bandelier National Monument, USFS Forest Service, Espanola and Jemez Ranger Districts, Valles Caldera National Preserve, Los Alamos County, and the Department of Energy/National Nuclear Security Administration.

The New Mexico State Historic Preservation Office (SHPO) met with Bandelier staff regarding this project on February 9, 2005. Consultations with the New Mexico SHPO are currently ongoing. The undertakings described in this document are subject to §106 of NHPA. This EA will be submitted to the SHPO for review and comment to fulfill Bandelier's obligations under §106 (36 CFR 800.8(c), *Use of the NEPA process for section 106 purposes*).

#### ***1.4 Relationship of the Proposed Action to Previous Planning Efforts***

The proposed action is consistent with historical planning documents and legislation related to the land acquisitions, Bandelier's Statement for Management (USDI National Park Service 1990), the 1995 Bandelier Resource Management Plan (USDI National Park Service 1995), Vegetation Management Plan (USDI National Park Service 2002), and the Bandelier Fire Management Plan Environmental Assessment/Assessment of Effect (USDI National Park Service 2004a), and Fire Management Plan (USDI National Park Service 2005).

**Final Environmental Statement, Final Master Plan. 1976.** The Final Environmental Statement (FES) for the Bandelier National Monument Master Plan was approved in March 1976, and the Master Plan was approved and signed in April 1977. The FES and Master Plan proposed federal acquisition of the headwaters of the Rito de los Frijoles (Upper Frijoles area) in order to preserve the natural character of the headwaters, thereby protecting the monuments resources downstream. The 3,076- acre tract was acquired from the Baca Land and Cattle Company in February, 1977. The plan and FES called for limited development of the Upper Frijoles area for visitor use. In the FES, the proposal for development in Upper Frijoles included a small visitor contact station, a 25- vehicle parking area, two vault- type toilets, 5 miles of road improvement, 8 miles of trail construction, and 18 miles of right- of- way and boundary fencing. Total development projected to occupy two or three acres. The area does not have a history of recreational use nor does it currently contain any facilities. A stipulation of the purchase agreement was that a boundary fence must be erected before public use could be permitted. No proposed activities under the FES were implemented.

**Upper Frijoles/Back Gate Development Concept Plan (DCP) 1983.** The DCP bridges the gap between the FES concepts (above) and comprehensive design for facilities to fulfill those concepts. The proposals and alternatives in the DCP conform to the general strategies of the Final Master Plan, and the impacts associated with their implementation were covered in the FES. Thus, the proposed activities under the DCP are compliant with NEPA from the 1976 FES document. Objectives under the DCP were to open the Upper Frijoles area for limited, low density day use in a manner consistent with park staffing levels, to protect the watershed of Frijoles Canyon, and to retain the

Upper Frijoles area as potential wilderness, pending a formal wilderness evaluation. Actions proposed under this plan for the Upper Frijoles area included three phases: The first phase called for erecting a boundary fence from FR 289 south to the Forest Service boundary line, construction of a 15- 20 car paved parking area (with portable toilet facilities) just east of the intersection of FR 289 and NM 4, the provision of a loop foot trail or cross- country ski trail from the parking area to a viewpoint of Frijoles Canyon and the removal of no trespassing signs on the south side of NM 4 and east side of FR 289 to open the area to public day use for hiking and cross- country skiing; the second phase called for fencing the remaining boundary of the Upper Frijoles tract (between the summits of Cerro Grande and Scooter Peak) and providing a 20- car paved parking area (with portable toilet facilities) on the northeastern side of NM 4. No trails were to be designated, although downed timber would be removed from old logging tracks leading up Cerro Grande. The DCP stipulated that once these actions were completed, the area north of NM4 would be open for winter use only; the third phase called for providing a 4.5 foot path trail connection through the Upper Frijoles Canyon to the existing trail system in the wilderness area of Frijoles Canyon.

Certain activities detailed in the DCP were implemented: the erection of a fence along FR 289, the construction of the cross country ski trail and associated parking area, and the opening of the ski trail to winter public day use. The remaining portion of the DCP was never implemented due to lack of funding related to the DCP- required construction of a boundary fence between the summits of Cerro Grande and Scooter Peak as a pre- condition for public access to lands north of NM 4. Although the 1977 warranty deed for Upper Frijoles only required a five year limitation to public access, the DCP maintained the boundary fencing requirement as a pre- condition for allowing public access to the remaining lands. The DCP is not consistent with current management perspectives and the 2000 federal acquisition of the Valles Caldera National Preserve have rendered the DCP fencing requirement as a pre- condition for public access obsolete.

**Statement for Management, Bandelier National Monument, 1990.** This document identifies and communicates management concerns and issues for Bandelier. The document called for the reassessment of decisions on the management of the Upper Frijoles unit. As of its writing in 1990, only the Upper Frijoles unit had been acquired by NPS. The Statement for Management also called for the revision of the 1983 Upper Frijoles/Backgate DCP in order to assess current conditions and make future management recommendations for the area.

**Bandelier National Monument Resource Management Plan, 1995.** This document describes, documents, and prioritizes resource management issues, problems, and actions needed to protect cultural and natural park resources. Bandelier's overriding resource management goal is to "provide the means and opportunity for people to



study, understand, and enjoy the resources of the monument without unduly compromising the resources or ethnographic values” (USDI National Park Service 1995). The prime management objective stated in the plan is to protect against and prevent the loss of cultural and natural resources in Bandelier.

**Bandelier Vegetation Management Plan, 2002.** The vegetation management plan describes the vegetation of Bandelier, identifies issues, sets specific management goals and objectives, prescribes management techniques, and identifies research and monitoring needs. It describes the desired future conditions (DFCs) for each vegetation type within the monument. Actions proposed in this EA are consistent with guidelines and recommendations in this plan specific to vegetation management in the Upper Frijoles and Alamo headwaters area.

**Bandelier Fire Management Plan, 2005.** The purpose of the Fire Management Plan (FMP) is to provide a framework for making fire and fuels management decisions and to describe fire and resource management goals and objectives. A goal of the FMP (also identified as a goal in Bandelier’s Resource Management Plan (USDI National Park Service 1995) is to:

*provide the means for staff and the public to preserve, protect, understand, and enjoy the cultural and natural resources of Bandelier National Monument through an integrated program where management activities support naturally functioning ecosystems consistent with cultural resource preservation needs.*

The FMP supports this goal by implementing actions to achieve the Desired Future Conditions (DFCs) for all vegetation community types within the monument. These actions include fire suppression, prescribed fire, wildland fire use for resource benefit, and manual and mechanical thinning. The FMP describes the logistics and mechanics of how prescribed burning or mechanical thinning would be accomplished in each vegetation zone. Annual burn plans and site-specific treatment plans are coordinated by monument staff each year to ensure that these natural resource objectives are fully integrated with safety goals of the FMP.

## **1.5 Regulations and Policies**

### **1.5.1 National Park Service Management Policies**

All activities conducted in Bandelier National Monument, including the proposed action, are guided by the Organic Act of 1916 (16 U.S.C. Sections 1 – 4), NPS Management Policies 2001 (2000), and the monument’s enabling legislation. In addition, the proposed action is consistent with NPS Director’s Order #12: Conservation Planning, Environmental Impact Analysis, and Decision Making (USDI National Park Service 2001), NPS- 28, Cultural Resource Management Guideline (USDI National Park Service

1998a), and Natural Resource Management Reference Manual #77 (USDI National Park Service, in progress).

### 1.5.2 Other Relevant Regulations and Policies

Other relevant legal requirements, regulations, and policies that are pertinent to this EA are listed below in Table 1.

Table 1. Other relevant regulations and policies listed by topic.

Topic	Relevant Regulations and/or Policies
Air Quality	Federal Clean Air Act; Clean Air Act Amendments of 1990
Endangered or Threatened Species and Their Habitats	Endangered Species Act
Water Quality and Hydrology	Clean Water Act; Executive Order 12088
Wetlands and Floodplains	Executive Order 11988; Executive Order 11990; Rivers and Harbors Act; Clean Water Act
Cultural Resources	§106 of the National Historic Preservation Act; 36 CFR 800; Executive Order 13007
Economics	40 CFR 1500 Regulations for Implementing NEPA
Environmental Justice	Executive Order 12898
Indian Trust Resources	Department of the Interior Secretarial Order No. 3206 and Secretarial Order No. 3175
Sustainability and Long-term Management	NEPA, 40 CFR 1500 Regulations for Implementing NEPA

### 1.6 Impact Topics Selected for Detailed Analysis

Issues and concerns affecting the proposed action were identified through internal and external scoping processes. Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were selected for detailed analysis by the internal NPS IDT as well as from public and other agency comments received during the scoping process to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were also identified on the

basis of federal laws, regulations, orders, and NPS Management Policies 2001 (USDI National Park Service 2000). A brief rationale for the selection of each impact topic is given below. The impact topics dismissed from detailed analysis, as well as the rationale for dismissal, are provided in the next section, 1.7 Impact Topics Dismissed from Further Consideration.

### **Soils, Hydrology, and Water Quality**

The currently closed monument lands were acquired to protect the watersheds of Frijoles and Alamo headwaters. These headwaters drain into Frijoles and Alamo Canyons, respectively, and flow downstream to the Rio Grande. National Park Service policies require protection of water quality consistent with the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) (P.L. 92- 500, 33 U.S.C. §1251 et seq., as amended by the Clean Water Act, P.L. 95- 217). The action alternatives proposed in this EA may have the ability to impact soils, hydrology, and water quality through soil compaction, soil displacement and erosion, and possible sedimentation, therefore, the soils, hydrology, and water quality will be addressed as an impact topic in this EA.

### **Vegetation**

There could be some impact to vegetation from the action alternatives from potential ground disturbance by designating routes in areas not previously disturbed as well as vegetation trampling by hikers. Therefore vegetation will be addressed as an impact topic in this EA.

### **Wildlife**

Some wildlife species may be disrupted from the action alternatives, either by noise, human presence, or other activities. For these reasons, wildlife will be addressed as an impact topic in this EA.

### **Special Status Species (Animals and Plants)**

There are special status species that may occur within the project area (see Chapter 3, Section 3.2.4), and may be affected by the action alternatives. Therefore this impact topic will be included for detailed analysis in this EA.

### **Archeological Resources**

Archeological surveys of the project area have identified archeological sites dating to the historic period (A.D. 1600 – present) that may be eligible for listing under the National Register of Historic Places (NRHP). There may be some impacts to these resources from route designation and recreational use. These impacts must be considered pursuant to §106 of the National Historic Preservation Act of 1966 (36 CFR Part 800, Protection of Historic Properties), so this impact topic will be addressed in this EA.

**Ethnographic Resources**

Associated Pueblo Indian groups have a special relationship to Bandelier. There may be some impacts to subsistence activities, sacred materials or places, or other ethnographic resources with which they are historically associated, therefore this impact topic is included for analysis in this EA.

**Park Operations**

Park operations, including staffing levels and quality and effectiveness of the infrastructure used in the operation of the monument in order to adequately protect and preserve monument resources and provide for a safe and effective visitor experience, could be affected by opening of currently closed lands within the monument.

**Visitor Use and Experience**

Bandelier National Monument is open year- round, except Christmas and New Year's Day. The monument averages about 285,000 visitors per year, with peak visitation between the months of May and September. Because the action alternatives proposed to open up currently closed lands to the public for year- round day use, there will be impacts to visitor use and experience. Therefore this impact topic will be addressed in this document.

**Land/Resource Managing Agencies, Tribal Land Management Plans, and Monument Neighbors**

Bandelier shares land boundaries with several federally- administered lands. The USDA Forest Service, Santa Fe National Forest, Jemez and Espanola districts are adjacent to the project area in Bandelier on the western and northeastern boundaries, respectively. In addition, the Valles Caldera National Preserve shares a common boundary with Bandelier in the project area. The Department of Energy (DOE) does not share a common boundary within the project area of Bandelier, however DOE does administer lands adjacent to Bandelier along the southern portion of NM 4. There are also two private inholdings located within the Alamo Headwaters area of the project area (Figure 2). Because the action alternatives propose to open currently closed lands that are located adjacent to other land owners and administrators, there may be impacts to monument neighbors and Land/Resource Management Agencies. In addition, the activities proposed in this EA may not be consistent with certain local, state, and tribal land management plans. Therefore this impact topic will be addressed in this EA.

***1.7 Impact Topics Dismissed from Further Consideration*****Geologic Resources**

The NPS Management Policies 2001 (USDI National Park Service 2000) requires protection of significant geologic and topographic features. Bandelier National

Monument is located on the southeast flank of the volcanic Jemez Mountains in north-central New Mexico. The Jemez Mountains were formed from a series of events beginning at least 13 million years B.P. to as recently as 50,000 years ago. The Valles Caldera, the central feature of this landscape, was created by two major eruptions at 1.2 and 1.6 million years ago; cumulatively these deposited the 300-meter thick Bandelier tuff in two distinct members (i.e. upper and lower). Cerros del Rio Basaltic lava flows from the east typically underlie the tuff flows and are exposed at lower elevations. The most recent eruption (El Cajete at 50- 60,000 years ago) covered the local landscape with many meters of pumice, much of which has been subsequently eroded and reworked, leaving pumice patches predominately on west facing slopes and deep alluvial deposits on lower slopes. The eastern facing flank of the Jemez Mountains, called the Pajarito Plateau, has been incised into an alternating landscape pattern of gently sloping mesas separated by deep, steep walled canyons. Modern drainages trend southeast, through the tuff and basalt layers, on their way to the Rio Grande. Following each of the two major tuff eruptions, new tributary drainage patterns were formed; the second tuff eruption also pushed the Rio Grande drainage eastward where it formed modern White Rock Canyon. Major tributary canyons within the monument from north to south include: Frijoles, Lummi, Alamo, Hondo, Capulin, Medio, and Sanchez. In the upper reaches of the first five canyons, erosion has exposed andesites of the Paliza Canyon Formation. These andesites are also exposed in the middle portions of Medio and Sanchez canyons. Cerros del Rio basalts are exposed in most of the canyons near the Rio Grande. In the lower part of Capulin Canyon, sediments of the Santa Fe Formation are exposed.

The proposed action would not alter the existing topography of the area and would not impact any geological resources present in Bandelier. Thus, geological resources was dismissed as an impact topic in this EA.

### **Air Quality**

The 1963 Clean Air Act, as amended (42 U.S.C. §7404 et seq.), requires federal land managers to protect park air quality. The NPS Management Policies 2001 (USDI National Park Service 2000) address the need to analyze air quality during park planning. Bandelier National Monument is designated as a Class I airshed under the 1963 Clean Air Act, as amended. Class I designated areas require that ambient air quality must essentially remain unchanged and cannot experience increases in air pollution above baseline levels. The proposed action would not result in any noticeable changes in air quality. There may be some negligible short term airborne dust generated under Alternative B, however the Class I designation for Bandelier would not change. No other proposed actions under any alternatives would affect air quality. Thus, air quality was dismissed from further consideration in this EA.

**Water Quantity**

Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, the discharge of dredged or fill material or excavation of U.S. waters. Bandelier National Monument is bordered to the south by the Rio Grande, which is a designated U.S. waterway. However, the project area is located on the northern and western border of Bandelier and does not intersect the Rio Grande. The action alternative proposed in this EA do not have the potential to alter water quantity within Bandelier or the Rio Grande, therefore this topic was dismissed from further analysis in this EA.

**Historic Resources**

Historical resources, for the purposes of this EA, are historic properties that retain some aspect of their original function. There are no historic resources within the project area. Therefore this impact topic was dismissed from further analysis in the EA.

**Cultural Landscapes**

Cultural landscapes as defined in this EA are landscapes associated with events, persons, design styles, or ways of life that are significant in American history, landscape architecture, archeology, engineering, and culture. A landscape may be listed under the NRHP. There are no cultural landscapes eligible for listing under the NRHP within the project area, therefore this impact topic was dismissed from further analysis.

Archeological surveys of the project area have identified certain landscape components, such as aspen dendroglyphs. These sites will be discussed under Archeological Resources.

**Wetlands and Floodplains**

Executive Order 11990, Protection of Wetlands, NPS Management Policies 2001 (USDI National Park Service 2000), and NPS Director's Order 12 (DO- 12) (USDI National Park Service 2001) requires protection of wetlands and an examination of potential impacts to any wetlands from a proposed project. There are no designated wetlands within the project area boundary (USDI Fish and Wildlife Service 2004), therefore wetlands was dismissed from further consideration in this EA.

Executive Order 11988, Floodplain Management, and NPS Director's Order 77- 2, Floodplain Management Guidelines (USDI National Park Service 1993) requires examination of potential impacts to floodplains and to avoid adverse impacts associated with their direct and indirect development. Because this project area is located in the Upper Frijoles and Alamo headwaters areas at higher elevation, there are no floodplains within the proposed action area. Thus this topic was dismissed from further consideration.

**Wild and Scenic Rivers or Ecologically Critical Areas**

No designated Wild and Scenic Rivers or other ecologically critical areas are known in or near Bandelier, therefore this topic was dismissed from further analysis in this EA.

**Wilderness**

The Wilderness Act of 1964 (16 U.S.C. §1131 – 1136) established the National Wilderness Preservation System “...composed of federally owned areas designated by the Congress as ‘wilderness areas,’ ... and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness”. The Wilderness Act directs the designation and management of wilderness areas within the NPS. In addition, NPS Management Policies 2001 (USDI National Park Service 2000) and Resource Manual 41, Wilderness Preservation and Management (RM- 41) (USDI National Park Service 1998b) direct parks to manage wilderness areas for the use and enjoyment of the American people in such a manner that will leave them unimpaired for future use and enjoyment as a wilderness.

Currently the lands within the project area are not designated wilderness areas. The project area has not been studied for wilderness suitability; however, it would be unlikely that it would meet the criteria for wilderness designation (as defined in the Wilderness Act of 1964 [16 U.S.C. §1131 – 1136] and NPS Management Policies 2001 [USDI National Park Service 2000]). Most lands within the project area have been extensively logged between 1935 and 1972, with evidence of logging roads and skid trails still present throughout the area. Further, there are inholders living within monument boundaries of the project area and a road was built in the Elk Meadows subdivision area just prior to NPS acquisition in 1999. The only area that may be deemed suitable for wilderness designation is south of NM 4 and east of FR 289, and no route development or additional parking areas are proposed for this area in this EA. Therefore, there would be no effects to wilderness resources or potential wilderness resources from the proposed alternative. Thus, wilderness was dismissed from further analysis in this EA.

**Prime or unique farmlands**

In August 1980, the CEQ directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common fruits, vegetables, and nuts. According to NRCS, none of the soils within Bandelier National Monument are classified as prime or unique farmlands. Therefore, this impact topic was dismissed from further consideration in this EA.

**Soundscapes**

Management Policies 2001 (USDI National Park Service 2000) states that the NPS will strive to preserve the natural quiet and natural sounds associated with the physical and biological resources of parks. Activities causing excessive or unnecessary unnatural sounds in and adjacent to parks will be monitored, and action will be taken to prevent or minimize unnatural sounds that adversely affect park resources or values and visitors' enjoyment of them. The proposed action in this EA does not have the potential to cause excessive or unnatural sounds would not have any long- term impacts on natural soundscapes. There would be no perceptible increases in unnatural noise from the proposed alternative. Therefore, soundscapes is dismissed from further consideration in this EA.

**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. The alternatives described in this EA would no have any health or environmental effects on low- income or minority populations or communities as defined in the Environmental Protection Agency (EPA) Environmental Justice Guidance (U.S. EPA 1998). Therefore, environmental justice was dismissed from further consideration in this EA.

**Socioeconomics**

The socioeconomic environment includes local and regional businesses and residents, the local and regional economy, and concessions at the monument. The economies of the surrounding communities of Los Alamos and White Rock function independently of Bandelier tourism, even though monument visitors may utilize local lodging and restaurants. The alternatives proposed in this document would not appreciably alter any facet of socioeconomics in the area. Therefore, this impact topic was dismissed from further analysis in this EA.

**Indian Trust Resources**

Federal agencies are required to address environmental impacts of their proposed actions on Indian Trust Resources in any environmental document (Secretarial Order 3175 and ECM95- 2). There are no identified Indian Trust Resources within Bandelier National Monument. Therefore, this topic has been dismissed from further consideration in this EA.



**Energy Requirements/Depletable Resource Requirements and Conservation Potential**

None of the alternatives would affect energy or depletable resource requirements or conservation potential to the extent that detailed analysis would be required.

## Chapter 2 Alternatives

### 2.0 *Introduction*

This chapter describes the action alternatives that wholly or partially meet the Purpose and Need as stated in Chapter 1. The No Action alternative is also discussed. Each action alternative was developed in response to issues identified during the internal and external scoping process described in Chapter 1. This chapter also describes the environmentally preferred alternative and any alternatives considered but dismissed from analysis. It provides an alternative comparison matrix, and impact comparison matrix, and a description of mitigation measures for each action alternative.

### 2.1 *Actions Common to All Alternatives*

Regardless of what alternative is selected, certain National Park Service policies will remain in place within the project area. The following represents a summary of current monument regulations applicable to the project area:

- No mechanized vehicles, including mountain bikes, are allowed off designated roadways within the monument.
- Campfires are prohibited in all areas of the monument at all times of the year. Backpacking stoves may be used for cooking and boiling water.
- To help protect wildlife, pets are prohibited in all areas of the monument, including on trails and routes, beyond campgrounds, picnic areas, and parking areas. They must be under physical restraint at all times while in the monument.
- Hunting is prohibited in the monument.
- Loaded weapons are prohibited in the monument.
- Plants, animals, artifacts, rocks, pine cones, sticks, soil, etc. are legally protected. Gathering is prohibited with the exception of nuts and berries for personal consumption in the monument.
- Walking on, climbing, entering, ascending, descending, or traversing an archeological site or cultural resource is prohibited in the project area.
- It is a federal offense to remove artifacts or to damage or deface any archeological site on federal land. A violation of these laws will result in imprisonment and/or fines up to \$100,000.

In addition, the following restrictions will apply to the project area under all alternatives:

- No saddle stock will be allowed in the project area. Private and commercial saddle stock will remain restricted to day use and to authorized trails outside of the project area within the monument.
- No overnight camping will be allowed in the project area and no backcountry permits will be issued.

Scientific research and educational activities including fire monitoring and ecology research are currently being conducted within the project area. These activities would continue regardless of the alternative selected. Administrative activities and access by monument personnel would continue and Native American access for certain traditional use activities and purposes would remain under all alternatives. In addition, the existing ski trails located within the project area south of NM 4 and east of FS 289 (Figure 2) will remain open for public day use.

Bandelier National Monument currently has a Memorandum of Understanding (MOU) with the six local pueblos that are most closely affiliated with Bandelier: Santa Clara, Santo Domingo, San Ildefonso, San Felipe, Zuni, and Cochiti. This MOU requires Bandelier to regularly and actively consult with these pueblos regarding monument planning, management, and operational decisions that affect subsistence activities, sacred materials or places, or other ethnographic resources with which they are historically associated. A Consultation Committee has been established consisting of tribal representatives from the six pueblos and serves to maintain an effective means of communication and consultation between Bandelier and Pueblo Indian communities that are traditionally associated with Bandelier National Monument. These consultation activities would continue under all alternatives.

## ***2.2 Alternative A—No Action Alternative***

The No Action alternative describes the action of continuing the present management operation and conditions. The No Action Alternative provides a basis for comparing management direction and environmental consequences of the proposed action(s) and must always be considered in an EA.

Under the No Action alternative, land closures and land management status in the acquired areas would remain in effect (Figure 3). There would be no public access to those lands located north of NM 4 and west of FR 289 within Sandoval County. Lands south of NM 4 that are currently open to winter day use only would remain open and all activities outlined above in Section 2.1, Actions Common to All Alternatives, would continue. However, no new routes or parking areas would be identified and the public would not be allowed to use lands located north of NM 4 and west of FR 289 within the project area for day time recreation.

Figure 3. Alternative A: No Action Alternative

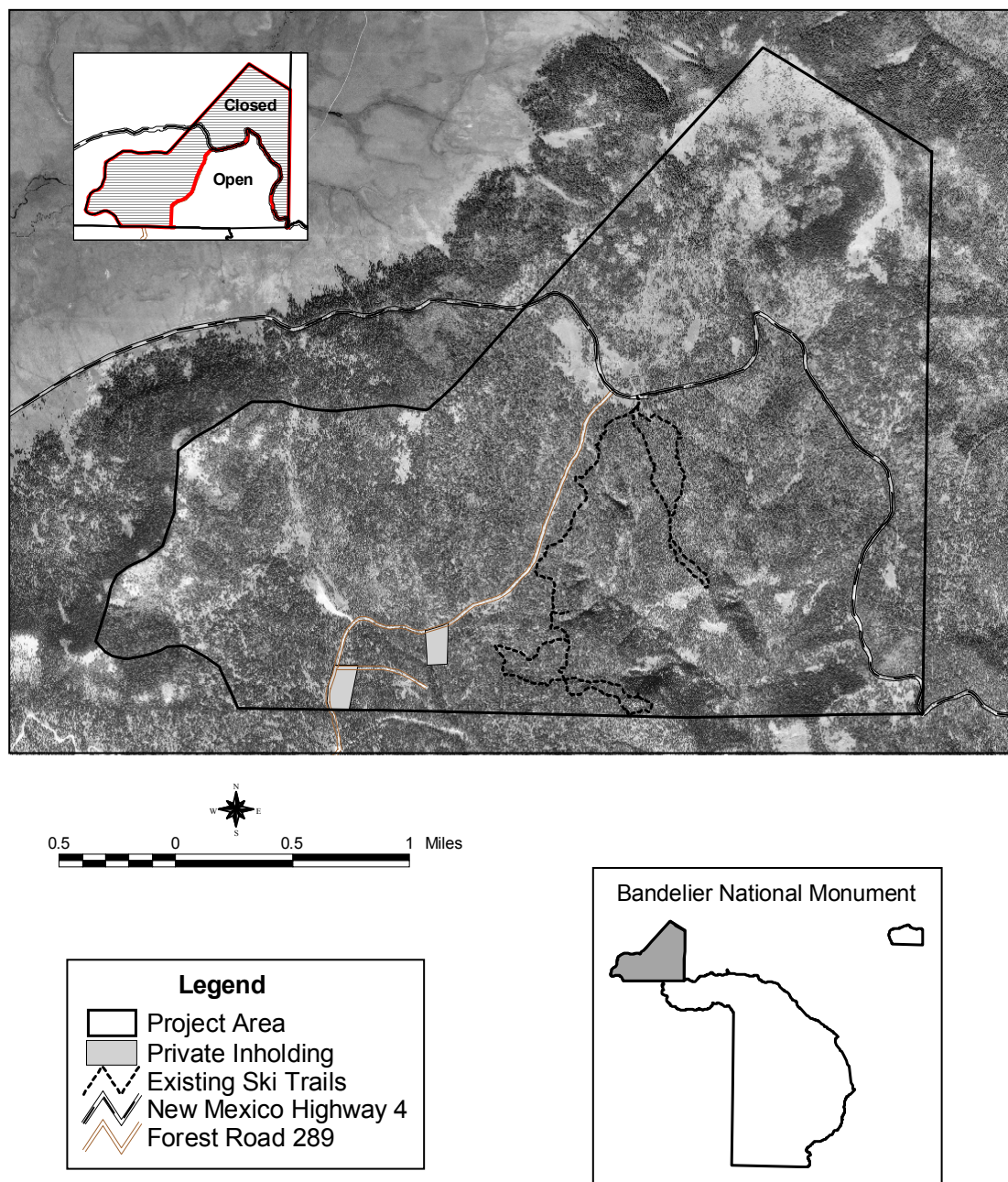


Figure 3. Alternative A: No Action alternative.

### 2.3 *Alternative B— NPS Preferred Alternative, Open Lands with Designated Routes*

This is the NPS preferred alternative. Under Alternative B, lands located north of NM 4 and west of FR 289 within Sandoval County would be open to the public for year- round day use. The lands south of NM 4 that are currently open to winter use only would be open to year- round day use. Figure 4 shows the areas proposed for opening under this alternative. No trespassing signs would be removed from closed areas, and dispersed public recreation would be allowed through the entire project area. Public access would be for day use only and all NPS regulations and current on- going activities detailed in Section 2.1, Actions Common to All Alternatives, would be in effect. Designated parking signs would be installed at two pullouts along NM 4 as well as at the two paved parking areas along NM 4 (Figure 4).

Under this alternative, two hiking routes would be designated for day use (Figure 4). These routes would be unimproved, low standard, and primitive. These routes would utilize existing game trails and logging skid trails to the extent possible with minimal new ground disturbance. While the routes would not be located in designated wilderness, they would be developed consistent with NPS Management Policies 2001 (USDI National Park Service 2000) such that:

*park visitors must accept wilderness on its own terms, without modern facilities provided for their comfort or convenience. Users must also accept certain risks, including possible dangers arising from wildlife, weather conditions, physical features, and other natural phenomena, that are inherent in the various elements and conditions that comprise a wilderness experience and primitive methods of travel.*

The designated routes would not be maintained in the same manner as the more developed trails in the monument. Only minimal hazard tree removal would occur if required. The routes would be monitored, and if they are found to degrade over time, additional route maintenance work may be done to improve the route and install erosion controls. However, these types of activities and their specific scope would be subject to future compliance requirements per the Bandelier Trails Maintenance Plan (USDI National Park Service 2004b).

A route accessing the Cerro Grande area would be designated and would be approximately 2.0 miles in length one way. The Cerro Grande Route would start at the existing parking areas for the cross country ski trail located north of NM 4 and would end at the summit of Cerro Grande, with an elevation gain of approximately 1,300 feet (Figure 4). The route will follow existing logging skid trails and general topographic



Figure 4. Alternative B: Open Lands with Designated Routes

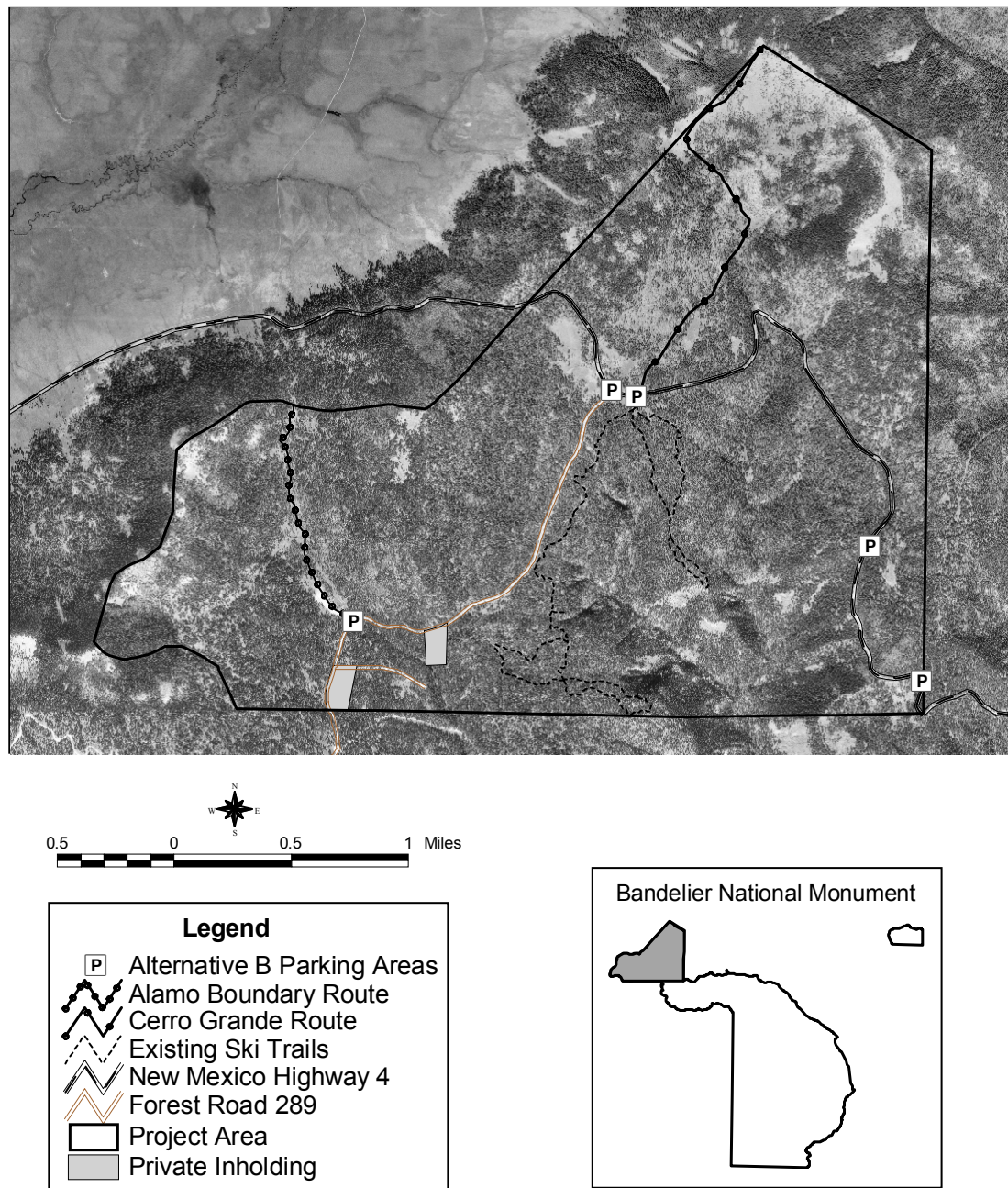


Figure 4. Alternative B: Open lands with designated routes.

features, to the uppermost west fork, then towards the southwest saddle to the ridgeline, then shift northeast to the summit. Figure 4 shows the approximate placement of the route. The route would utilize existing game trails and logging skid trails (created by the previous owner) to the extent possible with minimal new ground disturbance. Minor changes to route designation may occur during on- the- ground route marking efforts to implement this alternative. The route will be marked with tree tags and posts.

At this time, the route will be designated an out- and- back route. Opportunities for loop trails or intersections with trails on the Valles Caldera National Preserve or the Española District of the Santa Fe National Forest are not precluded by this proposed route but these future opportunities are not analyzed as part of this alternative and will not be discussed further in this EA. As stated above, this route would utilize existing game trails and logging skid trails (created by the previous owner) to the extent possible with minimal new ground disturbance. No new parking areas would be developed for this route, but parking adequacy would be monitored to determine whether future expansion of the parking area or additional designated parking may be warranted. Visitors would be encouraged to utilize the existing ski trail parking area located north of NM 4 and the parking area located at the intersection of FR 289 and NM 4. Visitors parking in this lot would be directed to stay along the south side of NM 4 until reaching the trailhead for the ski trails and then cross NM 4 within a signed pedestrian crossing area.

A second route (Alamo Boundary Route) would be designated under this alternative and would access the Alamo headwaters area (Figure 4). This route would start at FR 289 and end approximately 1.5 miles from the trailhead and meet the Bandelier/Valles Caldera National Preserve boundary line. The route will be marked with tree tags and posts. At this time, the Alamo Boundary Route would be designated an out- and- back route. Opportunities for loop trails or intersections with trails on the Valles Caldera National Preserve or the Jemez District of the Santa Fe National Forest are not precluded by this proposed route but these future opportunities are not analyzed as part of this alternative and will not be discussed further in this EA. During winter months, the gate to FR 289 is closed by the Santa Fe National Forest, Jemez Ranger District, in order to preserve the road surface and for wildlife protection. Bandelier would not request any alteration of the current Forest Service gate closure policy as part of this alternative. Thus, visitor parking for this route would be designated along FR 289 in the summer and at the paved parking lot at the intersection of FR 289 and NM 4 during winter. Visitors who wish to access FR 289 during winter may park in the parking lot and hike, ski, or snowshoe inside monument boundaries. When the road is open, visitors may utilize FR 289 to access the Alamo headwaters area in the monument.

Under Alternative B, a new designated parking area may be developed for the Alamo Boundary Route trailhead along FR 289 (Figure 4). The proposed parking area would

only be implemented if monitoring and high visitor use over the next three to five years indicates the need for a developed parking area at the trailhead. It is anticipated that visitor use of this route will be low and most visitors will park along FR 289 without difficulty. If visitor use is high at the trailhead and visitors are unable to safely park along FR 289, an improved parking area may be developed. This parking area would likely accommodate five to seven vehicles and would be approximately one acre in area. The area may be graded to help prevent erosion and a culvert may be installed at the entrance of the parking area from FR 289.

There will be a trailhead sign marking the start of the Cerro Grande Route at the paved parking area along NM 4. This sign will have backcountry user guidelines and a map of the Cerro Grande Route available. There may be a similar sign posted at the Alamo Boundary Route trailhead, but the need for such a sign will be determined following monitoring of use for at least one year subsequent to the opening. No other interpretative signage is proposed at this time.

### **Monitoring Program**

Under Alternative B, the project area would be monitored for three to five years in order to quantify the number of visitors to the area as well as to monitor for potential adverse impacts to resources from public use. The results of the monitoring will enable monument staff to identify actions to protect resources and enhance visitor experience and safety within the project area. The monitoring program may include, but is not limited to, the following:

- Patrol of parking areas, roads, and routes by Resource Protection staff.
- Installation of a trail- user counter at the Cerro Grande Route trailhead to help quantify visitor use.
- Establishment of photo points of critical areas along designated routes and parking areas to monitor potential resource impacts.
- Observational monitoring of project area by other monument staff and researchers.

### **Mitigation Measures for Alternative B**

Under this alternative, certain mitigation measures would be employed to reduce any potential adverse impacts from implementation of this alternative. The Cerro Grande Route and the Alamo Boundary Route will be designated so as to avoid archeological sites, sensitive natural resources, important ethnographic features, and wildlife use areas. Route designations would utilize existing game trails and disturbed areas such as logging skid trails to the extent possible. If new ground disturbance is required for route designation, such areas would be minimal in width, with a maximum width of 2 feet, and be primarily surficial (i.e., no digging, cut slopes). In the future, minor route changes



may be implemented to reduce soil erosion or unforeseen impacts to sensitive or unique cultural and natural resources or to enhance visitor safety and enjoyment.

Specific mitigation measures for construction of the proposed Alamo Boundary Route parking area would include archeological site marking and avoidance, and presence of an archeological staff monitor during construction. During all grading and culvert installation operations, water quality and erosion control best management practices (BMPs) would be employed per U.S. Environmental Protection Agency standards (U.S. Environmental Protection Agency 2005).

#### **2.4 *Alternative C—Open Lands with No Designated Routes***

Under Alternative C, lands currently closed would be opened for year round public access, day use only as described in Alternative B (Figure 5). No Trespassing signs would be removed in the closed areas, and dispersed recreation would be allowed throughout the entire project area. Public access would be for day use only and all NPS regulations and current on- going activities detailed in Section 2.1, Actions Common to All Alternatives, would be in effect.

Under Alternative C, there would be no routes or proposed parking areas designated as described in Alternative B. There would be designated parking signs posted at two traffic pullouts and two paved parking areas along NM 4 (Figure 5). Visitors accessing the Cerro Grande area and the existing ski trails would be encouraged to utilize the paved ski trail parking area located north of NM 4 and the parking area located at the intersection of FR 289 and NM 4. Visitors parking in this lot would be directed to stay along the south side of NM 4 until reaching the trailhead for the ski trails and then cross NM 4 within a signed pedestrian crossing area. Visitors wishing to access the Alamo headwaters area would be directed to park along FR 289 in the summer and at the paved parking lot at the intersection of FR 289 and NM 4 during winter. During winter months, the gate to FR 289 is closed by the Santa Fe National Forest, Jemez Ranger District, in order to preserve the road surface and for wildlife protection. Bandelier would not request any alteration of the current Forest Service gate closure policy as part of this alternative. Thus, visitors who wish to access FR 289 during winter may park in the parking lot and hike, ski, or snowshoe inside monument boundaries. When the road is open, visitors may utilize FR 289 to access the Alamo headwaters area in the monument.

#### **2.5 *Environmentally Preferred Alternative***

The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by CEQ. The CEQ provides direction that “[t]he

Figure 5. Alternative C: Open Lands with No Designated Routes

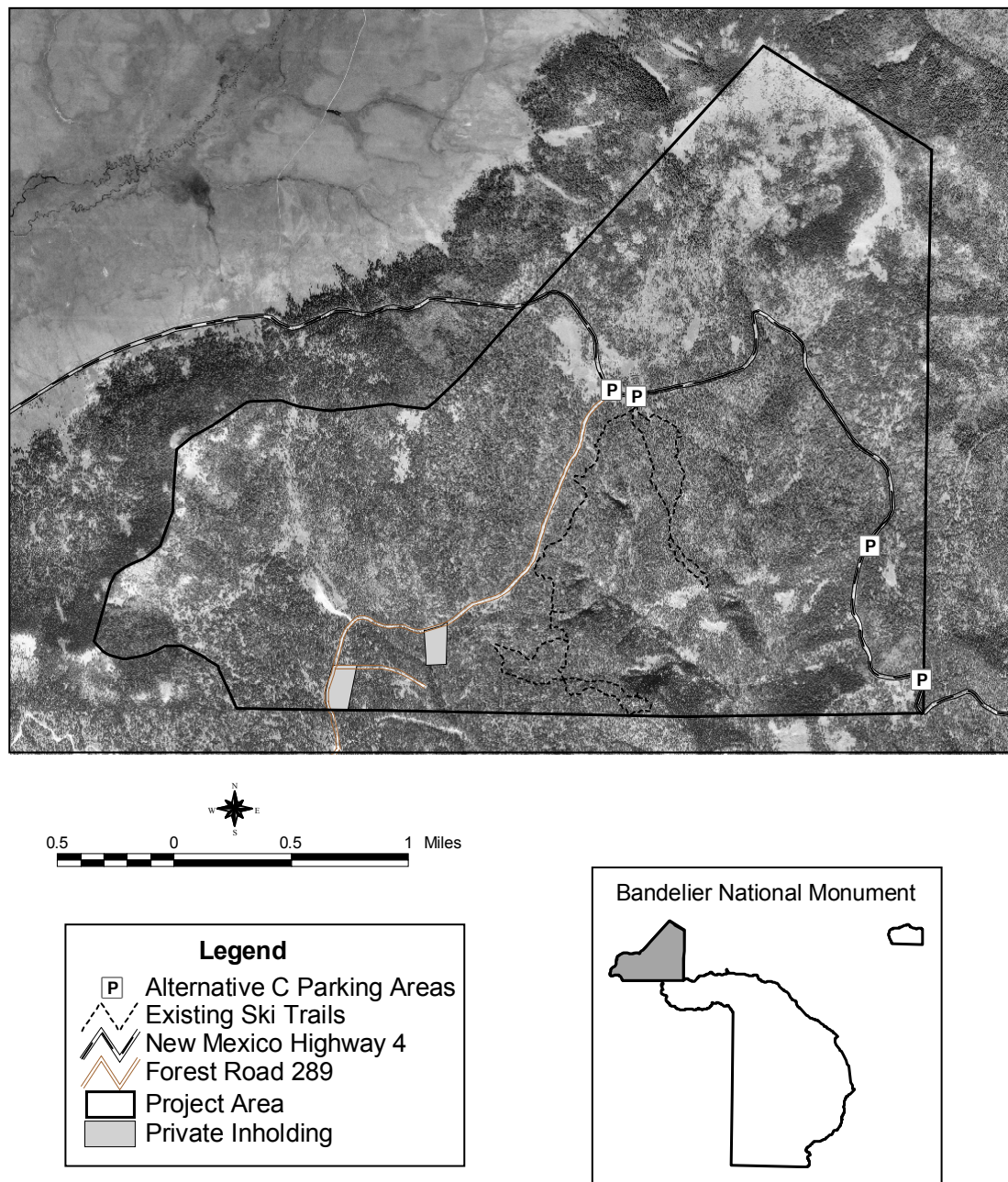


Figure 5. Alternative C: Open lands with no designated routes.

environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA, Section 101:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
3. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, whenever possible, an environment that supports diversity and variety of individual choice.
4. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
5. Enhance the quality of renewable resources and approach maximum attainable recycling of depletable resources.

Based on the criteria presented above, Alternative B, the NPS preferred alternative, is the environmentally preferred alternative. By opening up lands in the project area to public access, this alternative “[a]chieves a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities.” Visitors will be able to access and experience this unique area within the monument that was formerly closed to public use. This alternative will also “[a]ttain the widest range of beneficial uses of the environment [including the human environment] without degradation, risk of health or safety, or other undesirable or unintended consequences.” By designating two routes in the project area, visitors would be directed away from any sensitive cultural or natural resources. The routes would also provide guidance and navigation for visitors in the project area. This may enhance public safety and reduce the likelihood of lost hikers and search and rescue efforts. This alternative would also “[p]reserve important historic, cultural, and natural aspects of our natural heritage and [would] maintain...an environment that supports diversity and individual choice.” The routes would direct the major flow of visitor away from sensitive resources, and would also allow for dispersed recreation throughout the project area. Visitors would be able to access locations of their choice within the project area. For these reasons, Alternative B was selected as the environmentally preferred alternative.

Alternative A would not be the environmentally preferred alternative based on the criteria above because it would not achieve a balance between population and resource use that would permit a wide sharing of resources. Visitors would not be allowed to access these closed lands and thus this alternative would not support individual choice.

Alternative C would not be the environmentally preferred alternative because visitors would not be directed away from any sensitive cultural or natural resources via routes

(as in Alternative B). This alternative would not provide for the same level of preservation of important historic, cultural, and natural aspects of our national heritage as Alternative B. While visitors would enjoy variety and individual choice throughout the project area, certain sensitive resources may not be as well preserved.

## ***2.6 Alternatives Considered But Dismissed***

This section summarizes the alternatives that were originally considered by the IDT during internal and external scoping but dismissed from further analysis based on:

1. technical or economic infeasibility.
2. inability to meet project objectives or resolve need.
3. duplication with other, less environmentally damaging or less expensive alternatives.
4. conflict with an up- to- date and valid park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would need to be implemented.

### ***Open monument lands to public access and develop major trails and infrastructure.***

This was dismissed because it would cause significant impacts to monument resources as well as require major funding. Additionally, public use in the opened area is not expected to be high over the long term in comparison with usage at the headquarters area in Frijoles Canyon and thus this type of development would not be warranted. Monitoring of public use of the project area over the next three to five years will determine whether any additional development or infrastructure may be needed in the future.

***Open monument lands to public access using a reservation system similar to the Valles Caldera National Preserve.*** This was dismissed because of the low degree of environmental impacts associated with the proposed action (See Chapter 4). In addition, public use in the project area is not expected to be high over the long term in comparison with usage at the headquarters area in Frijoles Canyon. Thus regulation of crowds in order to protect resources in the project area is not warranted at this time. It was also considered to be technically and economically infeasible.

## 2.7 Summary of Alternatives

Table 2. Summary of activities proposed under each alternative.

Alternative	Public Access	Route Designations	Designated Parking
Alternative A—No Action	Monument lands north of NM 4 and west of FS 289 remain closed; lands south of NM 4 and east of FS 289 remain open for winter use only. This does not meet the objective of opening closed lands.	No new routes or trails designated.	No parking designated.
Alternative B—NPS Preferred Alternative, Open Lands with Designated Routes	All lands within the project area open to year- round, dispersed recreational day use. This does meet the objective of opening currently closed lands to public use.	Two unimproved, primitive routes designated: Cerro Grande Route and Alamo Boundary Route.	Designated parking at two pullouts along NM 4, and at paved ski trail parking area and paved parking area at intersection of FS 289 and NM 4. Proposed new developed parking area at Alamo Boundary Route trailhead, if warranted after monitoring.
Alternative C—Open Lands with No Designated Routes	All lands within the project area open to year- round, dispersed recreational day use. This does meet the objective of opening currently closed lands to public use.	No new routes or trails designated.	Designated parking at two pullouts along NM 4, and at paved ski trail parking area and paved parking area at intersection of FS 289 and NM 4.

## 2.8 Summary of Impacts by Alternative

Table 3 (below) summaries the environmental consequences by impact topic for each alternative. A more detailed analysis for each impact topic can be found in Chapter 4.

Table 3. Summary of environmental consequences by alternative.

Impact Topic	Alternative A—No Action Alternative	Alternative B—Open Lands with Designated Routes	Alternative C—Open Lands with No Designated Routes
Soils, Hydrology, and Water Quality	Localized negligible to minor, adverse, direct, short term, direct impacts from ongoing administrative activities.	Negligible to minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, short to long-term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. parking areas, designated trail routes, popular destinations and stopping points).	Negligible to minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, short to long-term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. near parking areas and at popular destinations and stopping points).
Vegetation	Negligible impacts given the current restrictions on public access to the area. Negligible cumulative impacts on vegetation.	Minor to moderate, adverse, direct, short and long term impacts to vegetation from trampling in high use areas. Most impacts would be localized to the designated routes and mitigations would be implemented to monitor any potential impacts. Minor to moderate cumulative impacts to vegetation.	Minor to moderate, adverse, direct, short and long term impacts to vegetation from trampling in high use areas. The lack of designated routes may moderately, adversely, and directly impact certain sensitive vegetation locations (e.g., wet meadows) in the short and long term. Minor to moderate cumulative impacts.
Wildlife	Negligible direct and indirect, short and long term impacts to wildlife. Some individuals would move short distances in response to human activity, but would remain at their current densities. There may be negligible to minor cumulative effects.	Negligible, direct and indirect, short and long term impacts to wildlife. Some individuals may disperse short distances in response to human presence, but overall population densities would not change. Negligible to minor cumulative effects.	Negligible direct and indirect, short and long term impacts to wildlife. Some individuals may disperse short distances in response to human presence, but overall population densities would not change. There may be negligible to minor cumulative effects.

Impact Topic	Alternative A—No Action Alternative	Alternative B—Open Lands with Designated Routes	Alternative C—Open Lands with No Designated Routes
<b>Special Status Species (federally listed threatened and endangered and species of concern, and New Mexico listed species)</b>	Negligible, adverse, direct and indirect, short and long term impacts. There may be negligible to minor cumulative effects when combined with past, present, and future foreseeable activities, such as certain fire management activities. For federally listed species, these impacts would equate to a “may affect, not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.	Negligible, adverse, direct and indirect, short and long term impacts. There may be negligible to minor cumulative effects when combined with past, present, and future foreseeable activities, such as certain fire management activities. For federally listed species, these impacts would equate to a “may affect, not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.	Negligible, direct and indirect, short and long term impacts. There may be negligible to minor cumulative effects to when combined with past, present, and future foreseeable activities, such as certain fire management activities. For federally listed species, these impacts would equate to a “may affect, not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.
Archeological Resources	Minor to moderate beneficial, direct and indirect, permanent impacts to archeological resources due to the continuing vegetative recovery and site stabilization and preservation. There may be negligible to minor cumulative impacts to archeological resources. For the purposes of §106 consultation under the NHPA, the determination of effect would be “no adverse effect”.	Minor adverse direct impacts to archeological resources due to artifact theft and dispersed ground disturbance from hiking. There may also be minor beneficial impacts to sites through stabilization and preservation. Cumulative impacts may be beneficial and adverse and minor. For the purposes of §106 consultation under the NHPA, the determination of effect would be “no adverse effect”.	Minor adverse direct effects to archeological resources due to artifact theft, site disturbance, and dispersed hiking. There may be minor adverse cumulative impacts to archeological resources. For the purposes of §106 consultation under the NHPA, the determination of effect would be “no adverse effect”.
Ethnographic Resources	No adverse direct or indirect, short or long term impacts and negligible to minor beneficial, direct and indirect, long term impacts. No cumulative impacts.	Negligible to minor adverse, direct, short term and long term impacts and beneficial minor, direct, short and long term impacts. Negligible cumulative impacts.	Negligible to minor adverse, direct, short and long term impacts. There may be negligible cumulative impacts.

Impact Topic	Alternative A—No Action Alternative	Alternative B—Open Lands with Designated Routes	Alternative C—Open Lands with No Designated Routes
Park Operations	Negligible (including direct, indirect, short and long term) impacts to park operations and negligible cumulative impacts to park operations. Monument divisions would not experience any appreciable effects on operations or responsibilities under this alternative.	Minor to moderate, direct and indirect, short and long term impacts to park operations. These impacts are not anticipated to be adverse, as current staffing and budget levels are expected to be sufficient to manage the opened lands. There may be minor to moderate cumulative impacts.	Minor to moderate cumulative impacts as described under Alternative B. Most divisions would experience some impacts to daily operations and responsibilities, but not to the extent that would require additional staffing or increased budgets. There may be minor to moderate cumulative impacts.
Visitor Use & Experience	Negligible to moderate, adverse, direct and indirect, short and long termThe may be negligible cumulative impacts from implementation of Alternative A.	Minor to major, beneficial, direct and indirect, short and long term impacts to visitor use and experience. Visitor experience within Bandelier would be enhanced by allowing public access to currently closed lands. There may be negligible cumulative impacts.	Minor to major, beneficial, direct and indirect, short and long term impacts to visitor use and experience. Visitor experience within Bandelier would be enhanced by allowing public access to currently closed lands. There may be negligible cumulative impacts.
Land/Resource Managing Agencies, Tribal Land Management Plans, and Monument Neighbors	Negligible adverse, direct, and indirect, short and long term impacts to private lands held within monument boundaries. There would be no impacts to land/resource managing agencies or tribal management plans under this alternative. There may be negligible cumulative impacts when combined with activities in the project area such as fire management activities.	Negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders and neighbors. There would be no conflicts with existing local, state, federal, or tribal land management plans.	Negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders and neighbors. There would be no conflicts with existing local, state, federal, or tribal land management plans.



## Chapter 3

### Affected Environment

#### 3.0 *Introduction*

The Council on Environmental Quality requires that NEPA documents “succinctly describe the environment of the area(s) to be affected or created by alternatives under consideration (1502.15).” Accordingly, this chapter describes the existing conditions of the biological, physical, cultural, and social resources that would be affected by the alternatives introduced in Chapter 2. It discusses a general site description of Bandelier National Monument and then describes in detail those resources identified in Chapter 1 under Impact Topics Selected for Detailed Analysis. The effects of implementation of the alternatives on specific impact topics are discussed in Chapter 4: Environmental Consequences.

#### 3.1 *General Site Description*

##### 3.1.1 *Geography*

Bandelier National Monument is located on the southern portion of the Pajarito Plateau in the Jemez Mountains at the southern edge of the Rocky Mountains in north-central New Mexico. It is approximately 10 miles southwest of Los Alamos and 45 miles northwest of Santa Fe (Figure 1). The monument’s northern boundary is situated on the rim of a large volcano (now the Valles Caldera National Preserve) that collapsed approximately one million years ago after its enormous eruption. The area is now composed of volcanic ash and lava flows that have been eroded into deep canyons separated by narrow mesas. Within the monument’s boundaries are 33,727 acres (approximately 15,740 hectares) of rugged canyons, mesas, and mountain slopes. The monument spans an elevational gradient from the Rio Grande at 5,300 ft (1,590 meters) to the summit of Cerro Grande at 10,199 ft (3,109 meters), an altitudinal range of 4,899 ft. (1,519 meters).

##### 3.1.2 *Geology*

Cerro Grande, a volcanic dome of the Tschicoma formation, lies on the southeast perimeter of the Valle Grande. This mountain, along with many in the Jemez Mountains, was formed prior to several major volcanic eruptions in the area, although additional volcanic domes have formed subsequently. At least two of the eruptions formed calderas that appear today in the heart of the Jemez Mountains. These broad green valleys prompted their first discoverers to name these mountains the Sierras de los Valles. The younger, larger caldera, the Valle Grande, truncates the older, smaller caldera, the Valle Toledo. Below the Cerro Grande, pyroclastic ash flow deposits of Bandelier Tuff spread out in a southeasterly direction toward the Rio Grande and are measured in thickness of up to 1000 ft (approximately 300 meters). Near the Rio

Grande, the Tuff overlies Cerros de Rio basalts. The eastern fan of the Bandelier Tuff is referred to as the Pajarito Plateau.

Streams have formed deep erosional canyons in the Bandelier Tuff. These canyons from north to south are: Frijoles, Lummis, Alamo, Hondo, Capulin, Medio, and Sanchez. In the upper reaches of the first five canyons, erosion has exposed andesites of the Paliza Canyon Formation. These andesites are also exposed in the middle portions of the Medio and Sanchez canyons. Cerros del Rio basalts are exposed in most of the canyons near the Rio Grande. In the lower part of Capulin Canyon, sediments of the Santa Fe Formation are exposed.

### 3.1.3 Climate

The climate within Bandelier National Monument is very localized depending on elevation and topographic aspect. Precipitation generally increases with elevation, although considerable variation is introduced by the erratic nature of thunderstorms during the summer months. The spring months of April – June are normally dry and summer months of July – August are wet, with afternoon thunderstorms common. The historic (69- year average) average yearly precipitation is 16.17 inches (in). The average annual precipitation from 1998 – 2003 was 11.47 in., with 2001 – 2003 averaging only 8.92 in. per year.

Normally a snow pack is formed during the winter months at the higher elevations, increasing stream flow considerably during the spring snow melt. Snow also falls at the lowest elevations, but typically does not persist. Temperatures range generally between a low of 0.0° Fahrenheit (F) in the winter months to a high of 100° F during summer, although extremes above or below are not uncommon. Diurnal temperature differences are typically near 30° F.

## 3.2 *Impact Topics*

The impact topics described below detail the affected environment specific to the project area (Figure 2) within the Frijoles and Alamo Headwaters area of Bandelier. They do not necessarily describe existing conditions found within the entire monument.

### 3.2.1 Soils, Hydrology, and Water Quality

A recent soil survey of Bandelier National Monument suggests that there are about 42 different kinds of soils in the Bandelier area (Hibner 2000). The soils vary widely depending on their parent material, depositional environment, landform position, elevation, and vegetative history. Common parent materials in project area include a range of volcanic substrates (e.g., rhyolite, latite, dacite), which have been variously weathered in place or locally reworked through alluvial transport, along with significant inputs of eolian deposited sediment. Grassland soils range from deep, sometimes rocky, well drained montane grassland types (i.e., Cosey) on mountain slopes to deep, poorly drained wet meadow types (Tranquilar) at the base of mountain slopes. Soils supporting

mixed conifer cover (e.g., Mapache) are generally shallower and less well developed than the adjacent grassland types (Figure 6). Depth to fractured bedrock, percent and size of rock fragments within the soil profile, and amount of exposed surface rock seems to vary widely across the soil types in relation to landform, slope, and slope position.

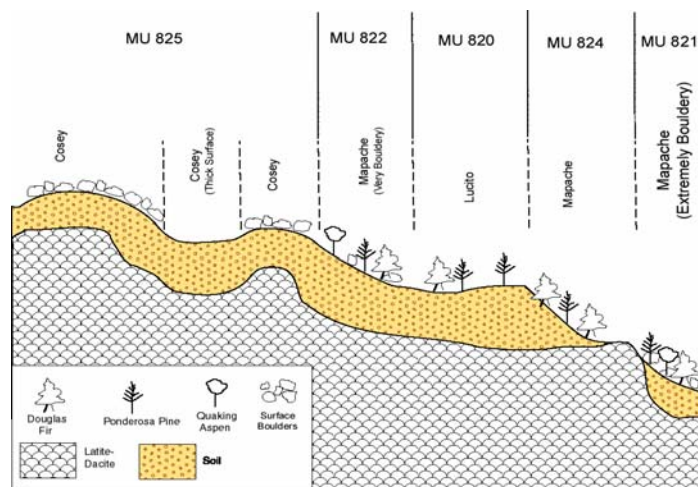


Figure 6. Soil map units on Cerro Grande and associated mountains (Hibner 2000).

The project area encompasses the upper watersheds of Frijoles and Alamo Canyons. There is no perennial surface flow along drainages on the upper mountain slopes in either watershed, but seasonal flow resulting primarily from snowmelt runoff is common. Runoff typically collects on low gradient toe slope areas (creating conditions favorable for formation of the poorly drained, wet meadow Tranquilar soils) where many cattle ponds (still present) were built to capture the water. Cattle pond impoundments were also constructed to capture snow melt runoff at various points along the upper slope drainages. While these impoundments are largely artificial, the Tranquilar soils suggest water naturally ponded seasonally in these low gradient, toe slope positions. Although unnatural, the large constructed water impoundments provide uncommon habitat in this area for various plant and wildlife species (e.g. pondweeds, American Bistort, Tiger Salamander, aquatic insects, and insect foraging bats) which require seasonal standing water. The water captured within the impoundments becomes murky and warm as summer progresses, supporting a locally unique although partly exotic assemblage of plant and animal life; the impoundments are relatively few and small in size with the captured water largely evaporating from these locations, so there is little opportunity for these ponds to influence water quality of stream reaches below NM 4, where perennial baseflow derives primarily from springs that tap deep ground aquifers. Within the project area, perennial flow is common in both drainages below the toe slope benches along which NM 4 traverses, but only Frijoles Creek has perennial flow to the Rio Grande in most years.

### 3.2.2 Vegetation

The vegetation community classification for the project area presented below was developed for management purposes to provide convenient and easily recognized groupings of major plant assemblages that occur at Bandelier. This classification is useful primarily at a landscape scale, therefore considerable variability may exist within the defined types. Major vegetation cover types within the project area include: mixed conifer forests, aspen groves, montane grasslands, and wet meadows. Detailed descriptions of these vegetation communities are provided below.

#### *Mixed conifer forests:*

Mixed conifer forests, occurring on mountain slopes and within upper canyon drainages, are characterized by a mixed overstory of mostly coniferous species (i.e. dominated by Engelmann spruce and Douglas fir with subdominants being ponderosa pine, white fir, aspen, and limber pine. Blue spruce is common in mesic meadow situations where it may form nearly pure stands. Engelmann spruce and Douglas fir are common throughout with ponderosa pine becoming dominant on dry mountain slopes and ridges. At high elevations on northern exposures (primarily outside monument boundaries), corkbark fir also becomes an important component of the mixed conifer type. Absence of fire from this type, as a result of fire suppression activities, has resulted in increased densities of the more shade tolerant trees in the understory, reduced herbaceous and shrub cover, and heavy fuel loading. Within this type are two sub-components distinguished by stand structure and species composition and a function of location and fire regime.

The common and widespread sub- component is distinguished by uneven stand structure with older growth, open stand structure, and an herbaceous/ shrub understory maintained by fire return intervals less than 15 years. The second sub- component is more limited in extent; it is distinguished by a uniform, even- aged stand structure which is maintained by episodic crown fire return intervals (>100 years) and is often localized to steep, upper elevation, canyon systems, or north facing slopes. The cool, moist conditions in these settings and associated species composition that produces compact ground litter, precludes surface fire in most years. Even aged structure is reflective of episodic mortality and establishment following fire events.

#### *Aspen groves:*

These communities are dominated by an overstory of aspen with an understory of grasses and forbs. It is considered a potentially long- lived, but fire dependent seral stage which colonizes mesic grasslands or crown fire patches in mixed coniferous forests. These aspen clones will be overtopped and suppressed by mixed conifer establishment in the absence of periodic fire disturbance.

***Montane grasslands, wet meadows, and other grassland types:***

This assemblage includes several grass dominated communities currently distributed as localized patches and becoming embedded within the mixed coniferous type through progressive tree invasion due to the absence of fire. Montane grasslands are grass and forb dominated openings within mixed conifer or aspen forests on southerly exposures of upper mountain slopes. Occasionally intermingled with montane meadows are rock fields (felsenmeers) which can support patchy shrub and forb growth where soils have accumulated. Wet meadow areas are similarly situated grassy openings within mixed conifer forests, but located at the low gradient base of mountain slopes where poorly drained soils and snow runoff create conditions favorable to seasonal water ponding in late spring; blue spruce is a common tree along the perimeters of wet meadows. Other montane grasslands include those grassy areas of more recent origin which may exist as a result of recent crown fire or mechanical clearing. All of these grasslands are interspersed with or bounded by stands of mixed conifer and aspen and can be considered a fire dependent seral stage since they will yield to mixed conifer establishment in the absence of fire. Patches of shrub (i.e. Gambel oak and mountain spray) and scattered coniferous trees are often present in all types.

The New Mexico Timber Company, which held timber rights to these lands until 1972. logged portions of it extensively between 1935 and 1972. Remnants of the logging road system are still apparent across the landscape.

**3.2.3 Wildlife**

Bandelier supports a wide variety of wildlife species, including approximately 1000 known arthropods, 5 amphibians, 14 reptiles, and 44 mammals (including 5 species of bats). In addition, about 115 bird species and 90 species of ants have been recorded in and around the monument (Allen 1984, 1989).

Wildlife presence and habitat use are closely associated with vegetation types and elevation gradients. Table 3.1 lists the most common wildlife found within the project area. Special status species are described in detail in Section 3.2.4.

Table 4. Common wildlife species found in the Bandelier project area.

<b>Taxon</b>	<b>Common Name (<i>scientific name</i>)</b>
<b>Mammals<sup>1</sup></b>	Abert's Squirrel ( <i>Sciurus aberti</i> )
	Coyote ( <i>Canis latrans</i> )
	Elk ( <i>Cervus elaphus</i> )
	Least Chipmunk ( <i>Eutamias minimus</i> )
	Long-eared Myotis ( <i>Myotis evotis</i> )
	Long-tailed Vole ( <i>Microtus longicaudus</i> )
	Northern Pocket Gopher ( <i>Thomomys talpoides</i> )
	Mule deer ( <i>Odocoileus hemionus</i> )
<b>Birds<sup>2</sup></b>	Violet-green Swallow ( <i>Tachycineta thalassina</i> )

	Mountain Chickadee ( <i>Poecile gambeli</i> )
	Warbling Vireo ( <i>Vireo gilvus</i> )
	Ruby- crowned Kinglet ( <i>Regulus calendula</i> )
	Yellow- rumped Warbler ( <i>Dendroica coronata</i> )
	Dark- eyed Junco ( <i>Junco hyemalis</i> )
	Northern Flicker ( <i>Colaptes auratus</i> )
	Cordilleran Flycatcher ( <i>Empidonax occidentalis</i> )
	Red- breasted Nuthatch ( <i>Sitta canadensis</i> )
<b>Reptiles and Amphibians<sup>3</sup></b>	Western Terrestrial Garter Snake ( <i>Thamnophis elegans</i> )
	Gopher Snake ( <i>Pituophis melanoleucus</i> )
	Eastern Fence Lizard ( <i>Sceloporus undulates</i> )
	Short- horned Lizard ( <i>Phrynosoma douglasi</i> )
	Many- lined Skink ( <i>Eumeces multivirgatus</i> )
	Tiger Salamander ( <i>Ambystoma tigrinum</i> )
	Western or Striped Chorus Frog ( <i>Pseudacris triseriata</i> )

<sup>1</sup> Cook et al. 2000; Bogan, Geluso, and Harding 2004;

<sup>2</sup> Cook et al. 2000; Fettig 1996; Fettig 2004

<sup>3</sup> Cook et al. 2000

### 3.2.4 Special Status Species

This section presents special status species that may be found in the project area. Special status species include: 1) species federally listed as threatened or endangered under the Endangered Species Act of 1973, as amended (ESA); 2) species that are proposed or are candidates for listing under ESA or federal species of concern that are not protected pursuant to ESA but are monitored for conservation status; and 3) State of New Mexico listed threatened or endangered species.

Table 5 lists federal and state listed threatened, endangered, proposed, and candidate species and species of concern that may occur within Sandoval County, New Mexico. The project area is located entirely within Sandoval County. This list was created using information obtained from the U.S. Fish and Wildlife Service (USFWS) for Los Alamos, Santa Fe, and Sandoval counties, New Mexico on February 28, 2005 (USFWS 2005a) and the New Mexico Natural Heritage Program Biological and Conservation Data System (NMNHP 2005). Table 5 lists the potential for occurrence within the project area based on species habitat association, life history, and historical documented occurrences. Only those species with a likely potential for occurrence are evaluated further in this document.

Table 5. Special status species that may occur in Sandoval County.

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>	Potential for Occurrence in project area
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC	T	Likely
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	SC		Unlikely
Baird's Sparrow	<i>Ammodramus bairdii</i>	SC	T	Unlikely
Bald Eagle	<i>Haliaeetus leucocephalis</i>	LE (partial status)	T	Likely
Gray Vireo	<i>Vireo vicinior</i>		T	Unlikely
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	LT		Likely
Mountain Plover	<i>Charadrius montanus</i>	SC		Unlikely
Northern Goshawk	<i>Accipiter gentiles</i>	SC		Likely
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	LE		Unlikely
Western Burrowing Owl	<i>Athene cunicularia hypugea</i>	SC		Unlikely
Whooping Crane	<i>Grus americana</i>	LE		Unlikely
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C		Unlikely
Black Footed Ferret	<i>Mustela nigripes</i>	E		Unlikely
Goat Peak Pika	<i>Ochotona princeps nigrescens</i>	SC		Likely
New Mexican Meadow Jumping Mouse	<i>Zapus hudsonius lutes</i>	SC	T	Unlikely
Spotted Bat	<i>Euderma maculatum</i>		T	Likely, in low numbers
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	SC		Unlikely
Jemez Mountains Salamander	<i>Plethodon neomexicanus</i>	SC	E	Likely
New Mexico Silverspot Butterfly	<i>Speyeria nokomis nitocris</i>	SC		Unlikely
Rio Grande Cutthroat Trout	<i>Oncorhynchus clarki virginalis</i>	SC		Unlikely
Rio Grande Silvery Minnow	<i>Hybognathus amarus</i>	LE	E	Unlikely
Rio Grande Sucker	<i>Catostomus plebeius</i>	SC		Unlikely
San Ysidro Tiger Beetle	<i>Cicindela willistoni funaroii</i>	SC		Unlikely
William Lar's Tiger Beetle	<i>Cicindela fulgida williamsi</i>	SC		Unlikely

Gypsum Townsendia	<i>Townsendia gypsophila</i>	SC		Unlikely
Gypsum Phacelia	<i>Phacelia</i> sp. nov.	SC		Unlikely
Knight's Milk-vetch	<i>Astragalus knightii</i>	SC		Unlikely
Mountain (wood) Lily	<i>Lilium philadelphicum</i> var. <i>andinum</i>		E	Likely
Parish's Alkali Grass	<i>Puccinellia parishii</i>	SC	E	Unlikely
Yellow Lady's Slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>		E	Likely

<sup>1</sup> Federal status under the ESA: LE = Endangered; LT = Threatened; C = Candidate for listing; SC = Species of Concern.

<sup>2</sup> State status: E = Endangered; T = Threatened.

<sup>3</sup> Potential for occurrence includes both resident and migratory.

### 3.2.4.1 Threatened and Endangered Species and Federal Species of Concern

Of the federally listed or candidate species presented in Table 5, only the Bald Eagle and Mexican Spotted Owl are likely to occur within the project area. Federal species of concern that are likely to occur in the project area are also included in this section. There are no proposed or candidate species that are likely to occur in the monument.

#### Threatened and Endangered Species

##### **Bald eagle**

Bald Eagles inhabit coastal areas, estuaries, unfrozen inland waters, and some arid areas of the western interior and southwestern portion of the U.S. (NMDGF 2004a). They prefer areas with high water- to- land edge, and areas with unimpeded views including both horizontal and vertical aspects. Areas selected for wintering habitat have an adequate food supply with access to open water such as river rapids, impoundments, dam spillways, lakes, and estuaries. Communal roosts are generally comprised of several individuals and are common in the winter months in areas that provide protection from adverse weather conditions. (NMDGF 2004a).

Bald Eagles are winter migrants in the area and are known to roost in main canyon mouths along the Rio Grande. Bald Eagles may roost rarely and individually but not consistently or multi- individual roosts within the project area. The project area does not provide protection from winter storms that eagles require. Suitable habitat for this species includes lowland riparian habitats with fish and adjacent large diameter snags, conifer tree species, or cliffs available for hunting perches roosting. Such habitat is not found in the project area.



**Mexican spotted owl**

Mexican Spotted Owls nest, roost, and forage in a diverse assemblage of vegetation communities. Mixed- conifer forests are commonly used throughout most of the range (USFWS 1995). In general, these communities are dominated by Douglas- fir and/or white fir, with co- dominant species including southwestern white pine, limber pine, and ponderosa pine (Brown et al., 1980). In addition to these species, the understory often contains broadleaved species such as Gambel oak, maples, boxelder, and New Mexico locust (USFWS 1995).

Three classes of habitat have been recognized for Mexican Spotted Owls: nesting, roosting, and foraging. Nesting habitat typically consists of closed- canopy forests or rocky canyons (USFWS 1995). Forests preferred by nesting spotted owls often contain mature or old- growth stands with complex structure and are typically uneven- aged, multi- storied, and have high canopy closure (USFWS 1995). In the northern range of this species (including southern Utah, southern Colorado, and far northern Arizona and New Mexico), owls may nest in caves or on cliff ledges in steep walled canyons that provide situations for cool microsites (USFWS 1995). For roosting, spotted owls will utilize small and large trees, scattered across the landscape; but they still maintain a preference for closed- canopy forest conditions. Spotted owls generally use a wider variety of forest conditions for foraging. Little is known about the pattern of use by foraging owls, but the habitat appears to be primarily defined by proximity to nesting or roosting habitat and its ability to provide vulnerable prey (USFWS 1995).

Major canyons within Bandelier are thought to have suitable nesting and/or roosting habitat for the Mexican Spotted Owl. As such, Bandelier has established two spotted owl management area designations, Suitable Nesting Areas (SNAs) and Nesting/Roosting Zones (NRZs). Areas where conditions are known to favor nesting spotted owls, as described above, are called SNAs. These areas include all known historic spotted owl nests and regular roost areas, plus other areas that are known to have similar habitat characteristics, such as cliff areas and forest stands that exhibit the physical characteristics as described above. The NRZs contain all nesting habitat and nearly all roosting habitat, but may also contain areas that are not suitable nesting or roosting habitat. The NRZ also includes foraging habitat.

The USFWS published the Final Rule for Final Designation of Critical Habitat for the Mexican Spotted Owl on August 31, 2004 (69 FR 53182). Sections of Bandelier have been included in this critical habitat designation, including mixed conifer communities in canyons and steep slopes up to 9,000 ft within the project area. There are several SNAs and NRZs identified within the project area. However, there has been only one documented occurrence of a Mexican Spotted Owl within the project area.

**Federal Species of Concern**

### **Northern Goshawk**

The Northern Goshawk is a raptor species that inhabits mid to high elevation (6,000 ft – 10,000 ft) ponderosa pine and mixed conifer forests (Graham et al. 1999). Nesting sites are generally located in mature to old growth forests with relatively large trees, high canopy closure, sparse ground cover, and open understories (Graham et al. 1999). Areas typically used for foraging include closed canopy forests with moderate tree densities. Goshawks prey primarily on medium to large sized birds and mammals (Squires and Reynolds 1997). There are documented occurrences of goshawks in ponderosa pine and mixed conifer forests above 7,000 ft within the project area in Bandelier.

### **Goat Peak Pika**

This small mammal is endemic to the Jemez Mountains and has a very limited range, found only in high elevations near 10,000 ft. It has been documented in the project area and is associated with montane grasslands and boulder fields (felsenmeres).

### **3.2.4.2 State Listed Species**

There are nine species with State of New Mexico designated special status (not including those with both state and federal listings, as shown in Table 5). Of these species, American peregrine falcon, spotted bat, Jemez Mountains salamander, and mountain (wood) lily, and yellow lady's slipper may be present within the project area.

### **American Peregrine Falcon**

Peregrine Falcons are known to utilize cliffs for nesting and prefer canyons that contain mixed conifer, ponderosa pine, Chihuahua/Apache pine, bristlecone/limber pine, and pinyon/juniper communities for foraging. In New Mexico, the breeding territories of Peregrine Falcons center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage (Hubbard 1985).

There is suitable Peregrine Falcon habitat within Bandelier National Monument. The preferred breeding habitat is characterized by narrow canyons cut through volcanic tuff. Suitable foraging areas are located from White Rock Canyon to Cochiti Lake to the upper slopes of the Valles Caldera rim. Vegetation is primarily pinyon/juniper woodlands, ponderosa pine forests, and, mixed conifer forests which extend from the higher elevations down into the canyons. (USDI National Park Service 1994). The *Bandelier National Monument Peregrine Falcon Habitat Management Plan* (USDI National Park Service 1994) details the types of activities that could occur within and adjacent to suitable habitat.

### **Spotted Bat**

This species is a cliff dweller that roosts in cracks and crevices in cliffs and canyons (NMGFD 2004b). In the Jemez Mountains, this species has been observed in ponderosa pine and mixed conifer forests adjacent to streams or water holes. They are thought to use habitats seasonally, utilizing ponderosa pine forests during breeding

season (March - July) and moving to lower elevation woodlands at other times of the year (NMGFD 2004b).

### **Jemez Mountains Salamander**

In Bandelier, this species utilizes mixed conifer and ponderosa pine forests above 8,000 feet. It prefers areas with relatively high humidity and soils with a specific rock structure (NMGFD 2004c). Typically, it will spend much of its time below the surface, under rocks and fallen logs, but will surface during the wettest part of the summer for short periods of time. This species has been documented within the project area.

### **Mountain (Wood) Lily**

The mountain lily is locally abundant in the Jemez Mountains, along well watered, upper canyon reaches, under relatively open, mixed conifer forest canopies.

### **Yellow Lady's Slipper**

The lady slipper is an uncommon species in the Jemez Mountains, which occurs in relatively open, grassy mixed conifer forests of upper elevation, mesic canyon bottoms, favoring well watered benches, seeps, and bogs on the north facing slopes.

## **3.2.5 Archeological Resources**

Archeological resources include any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research. Archeological sites are spatially finite areas containing physical remains of past human activity, and they are important for the information they can provide regarding prehistoric and historic lifeways. They are also important to people as a tangible link to the past.

A large proportion of the archeological sites in Bandelier relate to the Ancestral Pueblo occupation of the area dating from approximately A.D. 1175 to A.D. 1550, but sites pertaining to earlier and later periods are present as well. The prehistoric sites in the monument consist of a range of archeological materials including flaked and ground stone tools, waste from tool manufacture, broken pottery, food processing features, fire hearths, structural remains, and rock art. Structural remains include 1- 2 room masonry structures, masonry pueblos containing 6 to 400 rooms, mixed masonry and adobe pueblos containing up to 40 rooms, cavate structures, and cavate pueblos. To date, 2,805 archeological sites have been recorded within Bandelier. Most sites with structural remains are located on mesa tops, canyon bottoms, and talus slopes up to 7,800 feet in elevation. Cavates and associated masonry structures are located at cliff bases and on talus slopes. Ceramic and lithic artifact scatters occur throughout the monument,

including the high elevation areas where lithic scatters and quarries are the predominant site types.

Historic archeological sites, distinct from historical resources dismissed from further analysis in Chapter 1, provide important information not available in written records, such as cultural patterns typically omitted from historical literature (related to gender and ethnic groups), early building construction techniques, lifestyles of early settlers, trade and procurement of goods and materials, and interactions with native peoples. Archeological sites pertaining to the historic period (post- 1600) consist of wooden corrals, historic metal and glass artifact dumps, remains of log structures, water diversion structures, aspen dendroglyphs, historic telephone lines, abandoned trails, and abandoned roads.

Approximately 68% of the monument has been surveyed for archeological sites, with roughly 5% remaining to be surveyed between 2005 and 2009. Over 27% of the monument can not be surveyed due to steep slopes (> 30 degrees). Archeological surveys of the project area were conducted in 2004. A total of 85 archeological sites were identified. All sites identified in the project area during the 2004 survey are eligible for listing on the National Register of Historic Places (NRHP). The NRHP is the comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture kept by NPS under the authority of the National Historic Preservation Act of 1966.

Of the 85 archeological sites documented in the project area, 48 were lithic scatters of unknown temporal affiliation. These sites are most likely related to the procurement and/or reduction of obsidian, most notably obsidian from the Rabbit Mountain source. The second most common site consists of artifact scatters, dendroglyphs or structures dating to the historic period (A.D. 1600 – present). There are several sites dating back to the early 1900's, however most sites post- date 1950. Nearly all of these historic archeological sites are related to logging or ranching activities in the area. Most of the dendroglyph sites are located near modern roads. Table 6 lists the number of archeological sites documented by type within the project area, as well as a description of the general features of each type.

Table 6. Archeological sites documented within the Bandelier project area.

Site Type	Number Documented	General Features
Lithic Scatter, unknown temporal affiliation	48	Low density lithic scatters.
Lithic Scatter, Archaic Period	11	Armijo or En Medio Phase (B.C 2000 – A.D 500); Bajada and San Jose Phase (B.C. 5000 – B.C. 2000).
Lithic Scatter, unknown	10	Lithic scatter of unknown

affiliation, Historic Period, unknown		affiliation dating to Historic Period. Trash scatters, dendroglyphs, some low density obsidian flakes.
Quarry, lithic scatter, unknown temporal affiliation	1	Extensive obsidian lithic scatter resulting from tool making activities.
Historic, ranching	7	Historic trash, structures, livestock pen, and aspen dendroglyphs. Most post- date 1950.
Historic, dendroglyphs	3	Aspen groves containing dendroglyphs; appear to be associated with NM 4.
Historic, telephone line	1	Remains of early 1900's to 1960's telephone line; series of trees with attached ceramic or glass insulators.
Ancestral Pueblo scatter	4	Lithic scatters and utility ware sherds, obsidian flakes, pottery styles, and recent historic cans.

### 3.2.6 Ethnographic Resources

The NPS 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” (USDI National Park Service 2000). Many Native American pueblos and tribes continue their traditional cultural association with NPS lands and resources. Of the 19 federally recognized Pueblo Indian groups in New Mexico, six pueblos have the closest cultural affiliation with Bandelier—the Pueblos of Santa Clara, Santo Domingo, San Ildefonso, San Felipe, Cochiti and Zuni.

As described in Section 2.1, an MOU regarding consultation between Bandelier and the six pueblos most closely associated with Bandelier is currently in place. This MOU requires Bandelier to regularly and actively consult with these pueblos regarding monument planning, management, and operational decisions that affect subsistence activities, sacred materials or places, or other ethnographic resources with which they are historically associated. Consultation with affiliated Pueblos on this project was initiated in 2004 during regular consultation meetings pursuant to the MOU. Additionally, a separate invitation to participate in project planning efforts was extended to the Jemez Pueblo. To date, consultation efforts have included mailing scoping brochures that seek input on planning efforts to all 19 pueblos, invitation to the January 2005 public scoping meeting in Los Alamos, and participation in regular tribal consultation meetings. Focused, detailed consultation with the pueblos is currently on-

going.

As described in Section 2.1, Actions Common to All Alternatives, the lands in the project area are utilized by some Native American pueblos for traditional uses and religious purposes. There are no identified designated Traditional Cultural Properties (TCPs) within the project area, but these lands do have certain traditional use and religious significance to some local pueblos.

### 3.2.7 Park Operations

Bandelier National Monument staff levels vary seasonally, with 69 permanent year-round staff members and 40 additional seasonal and volunteer staff during summer months. The staff is separated into six divisions and/or programs with different functions and responsibilities: Administration, Fire Management, Interpretation, Maintenance, Visitor and Resource Protection, and Resources. A brief description of functions and responsibilities are provided below:

Administration: Staff in this area direct numerous administrative functions to facilitate rewarding visitor experiences and the protection of park resources. Activities include budgeting and finance, procurement, human resources management, property management, strategic planning, and information technology.

Fire Management Program: This program is responsible for safely and effectively managing wildland and prescribed fires, while providing for the protection of life, property, and the monument's natural and cultural resources.

Currently, the Fire Management Program has management units located in the project area. There are fire ecology monitoring plots located on Cerro Grande. The 2005 FMP details activities proposed for the area, which may include prescribed fire and wildland fire for a resource benefit, manual and mechanical thinning, and fire suppression. Fire Management staff monitor and utilize the project area on a near daily basis.

Interpretation Division: This division is responsible for interpretive and educational programs at the monument. This includes operation of the visitor's center, conducting information and orientation programs, providing curriculum-based educational programs, and providing interpretative media.

Currently, the Interpretation Division provides visitor information on the winter-use cross country ski trails in the project area. A map of the trails and rules and regulations is distributed at the visitor center and is available at the trailhead.

Maintenance Division: This division is responsible for providing a safe, sanitary, environmentally protective, and esthetically pleasing environment for monument visitors and employees; protection of the physical integrity of monument facilities; and preservation and maintenance of facilities in their optimum sustainable condition to the

greatest extent possible. This includes maintenance and upkeep of all monument facilities, including the CCC Historic District at monument headquarters, trail maintenance, road maintenance, and vehicle maintenance,

The maintenance staff workload does not currently emphasize lands in the project area. There are no standing buildings or facilities located within the area. However, the maintenance staff is responsible for repair of the paved parking areas along NM 4.

Visitor and Resource Protection Division: This division is responsible for visitor and resource protection aspects of monument. Law enforcement is a major component of this division. The objectives of the law enforcement program are the prevention of criminal activities through resource education, public safety efforts, and deterrence; and the detection and investigation of criminal activity and apprehension and successful prosecution of criminal violators.

The Bandelier protection staff patrols all developed and non- developed areas in the monument daily throughout the year. With increased visitation in the late spring, late summer and fall seasons, patrol frequency shifts from the front- country zones to backcountry, wilderness, and non- developed areas. Vehicle patrols are conducted on all monument roads. Trail and off- trail patrols are primarily on foot, but may include horse work. Patrol emphasis is on visitor and employee safety, resource protection—especially of sensitive cultural and archeological sites, fire prevention, and minor maintenance of trails within guidelines. Currently, the interior of the project area is patrolled on a weekly basis, with daily vehicle patrols on NM 4 and FR 289.

Resources Division: The overriding goals of this division are to 1) preserve, protect, interpret, and manage the cultural and natural resources of the monument within naturally functioning ecosystems, consistent with cultural resource preservation; and 2) provide the means and opportunity for people to study, understand, and enjoy the resources of the monument without unduly compromising the resources or ethnographic values.

The Resources Division currently conducts ecological research in the project area. These studies are ongoing projects with research plots located throughout the Cerro Grande area.

### 3.2.8 Visitor Use and Experience

#### 3.2.8.1 Visitation

Bandelier National Monument is one of the larger, more visited NPS units in New Mexico. It is located approximately 45 miles northwest of Santa Fe, west and south of New Mexico NM 4. Bandelier is open year round, with shorter visitation hours in the winter months. Visitation reports for the past 20 years show that the number of visitors

generally increased from 1981 to the mid 1990s, with visitation peaking at over 400,000 in 1994. In the late 1990s, visitation decreased, and the latest figures show visitation leveling out at near 275,000 visitors annually.

According to the 1995 Visitor Survey Report, Bandelier receives 50% of its visitors during the summer months of June, July, and August. Peak visitation occurs in July for most years. Table 7 shows the monthly visitation for 2004. Weekend use normally exceeds weekday use; the average stay is approximately two to three hours; and most visitors are day- trippers from Santa Fe.

Table 7. 2004 monthly and annual visitation for Bandelier National Monument.

<b>Month</b>	<b>Visits</b>
January	8,693
February	6,599
March	21,399
April	23,510
May	33,314
June	30,785
July	35,133
August	32,626
September	23,822
October	27,451
November	12,546
December	8,247
<b>TOTAL</b>	<b>264,125</b>

### 3.2.8.2 Visitor Use Areas and Services

The NPS holdings that comprise Bandelier exist in two noncontiguous parcels: (1) the main unit that includes Frijoles Canyon, where the cliff dwellings and visitor center are located; and (2) the Tsankawi unit, where more limited visitor use occurs. As stated above, the monument shares borders with the Department of Energy (Los Alamos National Laboratory), the Santa Fe National Forest, the Valles Caldera National Preserve, the State of New Mexico, and San Ildefonso Pueblo. Visitor use of the monument is influenced by the availability of services and facilities on lands near the monument. For example, the broadscale availability of camping areas on the Santa Fe National Forest reduces visitor use of Bandelier's lower elevation front country campground. The lack of many group camping facilities in the Jemez Mountains results in the concentrated use of Bandelier's frontcountry group campground (Ponderosa Campground).



The following list provides detailed descriptions of Bandelier's visitor use areas and services offered:

**Frijoles Canyon (Cliff Dwellings and Trail/Visitor Center)**

This is the primary visitor use area, providing the main interpretive activities offered at the monument. The cliff dwellings, or cavate structures, and ancestral pueblo villages are located immediately behind the visitor center. Over 98% of monument visitors walk on the one- mile Main Loop Trail through Tyuonyi Pueblo and the surrounding cavates. Many continue an additional mile to Alcove House.

**Visitor Center**

The Visitor Center, located in the heart of Frijoles Canyon, is the primary entry and exit point for all monument visitors. Visitors can obtain information about the primary features of the monument, scheduled activities, and the local area. A small museum houses cultural history exhibits, and an audio- video program and bookstore are available.

**Campgrounds**

Two frontcountry campgrounds, Juniper and Ponderosa, are located in the monument. Juniper Campground contains 94 individual sites. Ponderosa Campground contains two group sites that can accommodate up to 50 people each. Both are developed campsites with picnic tables, grills, running water, and toilets. Camping fees are charged for both areas.

**Trails**

Bandelier contains more than 23,000 acres of designated wilderness with more than 70 miles of hiking trails. Thirty- nine miles are part of the National Trails System. The terrain can be challenging and the scenery spectacular. Elevations range from 5,000 to 10,000 feet. Lush, narrow canyons alternate with sweeping mesa- top vistas. Free permits for overnight camping are issued at the visitor center. Three trailheads provide access for stock users to many miles of backcountry trails.

**Tsankawi Unit**

The Tsankawi Unit is located in a separate parcel near the town of White Rock approximately 15 miles northeast of the monument headquarters. The unit contains Tsankawi Pueblo, an ancestral village of San Ildefonso Pueblo, and 148 other archeological sites including small pueblos, field houses, artifact scatters and petroglyph panels.

**Project Area (Frijoles and Alamo Headwaters)**

The project area is currently closed to public access, except for the area south of NM 4 and east of FR 289 (Figure 3). Limited access by certain Native American pueblos is permitted within the project area for traditional use activities and purposes.

### 3.2.9 Land/Resource Managing Agencies, Tribal Land Management Plans, and Monument Neighbors

As described in Chapter 1, Bandelier shares land boundaries with several federally-administered lands. The USDA Forest Service, Santa Fe National Forest, Jemez and Espanola districts are adjacent to the project area in Bandelier on the western and northeastern boundaries, respectively. In addition, the Valles Caldera National Preserve shares a common boundary with Bandelier in the project area. The DOE does not share a common boundary within the project area, however DOE does administer lands adjacent to Bandelier along the southern portion of NM 4. There are also two private inholdings located within the Alamo Headwaters area of the project area (Figure 2).

The Santa Fe National Forest Plan (USDA Forest Service 1987) describes the types of activities that are permitted on lands adjacent to Bandelier within the Española and Jemez Ranger Districts. These activities include natural and cultural resource management activities, hiking, camping, hunting (in- season and with appropriate permits), off- road vehicle use, grazing, and timber harvesting. Public access to these Forest Service lands is unrestricted year- round, with the exception of certain fire hazard restrictions or other closures related to resource protection or public safety. As described in Chapter 2, FR 289 is closed during the winter (December to April) for resource protection but Forest Service lands are generally open to public use year-round.

The Valles Caldera National Preserve lands are managed by the Valles Caldera Trust (VCT) under the Draft Framework and Strategic Guidance for Comprehensive Management (Valles Caldera Trust 2003). The VCT regulates public uses within the preserve including elk hunting and viewing, hiking and camping, touring and education, fishing, winter activities, horseback riding, other hunting activities, and special uses. Valles Caldera lands adjacent to Bandelier are subject to controlled public access, with the exception of the Valle Grande and Coyote Call trails located in the southeastern portion of the Valles Caldera, just south of NM 4, which are non- fee during summer.

In 2003, the DOE released the Department of Energy, National Nuclear Security Administration, Finding of No Significant Impact for the Los Alamos National Laboratory Proposed Trails Management Program, Los Alamos, New Mexico (DOE/NNSA 2003). This document details the types of uses and public access to the trail network located on DOE- administered lands. As stated earlier, DOE does not share a common boundary within the project area, however DOE does administer lands adjacent to Bandelier along the southern portion of NM 4. Since these trails do not share a common boundary with the project area, DOE trails specifically will not be discussed further in this document. Chapter 4 will include any potential impacts to DOE lands in general from the alternatives.

There are no tribal lands located adjacent to the project area, therefore no tribal land management plans will be addressed here. Any potential impacts to ethnographic resources located within the project area will be discussed under the Ethnographic Resources impact topic.

There are two private inholdings located within the project area (Figure 2). These lands are accessed via FR 289. During winter, inholders are allowed access to FR 289 but currently are not allowed to trespass onto Bandelier lands.

## Chapter 4

### Environmental Consequences

#### 4.0 Introduction

This chapter describes the environmental consequences, or potential impacts, on the biological, physical, cultural, and social environment within the project area at Bandelier National Monument from implementation of the three alternatives considered in this EA. The impact topics discussed are the same as those presented in Chapter 3, Affected Environment.

#### 4.1 Impact Assessment Methodology

All alternatives have been evaluated for their effects on the impact topics determined during the scoping process. For each impact topic, impacts are defined in terms of *context*, *intensity*, *timing*, and *duration*. Direct, indirect, and cumulative effects are discussed in each impact topic. Definitions of *intensity* levels varied by impact topic, but, for all impact topics, the following definitions were applied.

- 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.
- Short- term:* An effect that within a short period of time would no longer be detectable, as the resource is returned to its predisturbance condition or appearance in generally less than 5 years.
- Long- term:* A change in a resource or its condition that does not return the resource to predisturbance condition or appearance, and for all practical purposes is considered permanent.

Measures of *intensity* of impacts considers whether an impact would be negligible, minor, moderate, or major. These designations are used to describe both beneficial and adverse impacts and will be defined for each impact topic.

##### 4.1.1 Cumulative Impacts Analysis

The CEQ regulations (40 CFR Parts 1500- 1508) require an assessment of cumulative effects when implementing NEPA. Cumulative effects 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” (1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. In this analysis, cumulative impacts were determined by combining the effects of each alternative with other past, present, and reasonably foreseeable future actions.

For the purposes of the cumulative effects analysis in this EA, past, present, reasonably foreseeable actions within the project area include those ongoing scientific research and educational activities described in Section 2.1, Actions Common to All Alternatives as well as fire management activities implemented under the Bandelier Fire Management Plan, as described in Section 1.4. Administrative activities and access by monument personnel would continue and Native American access for certain traditional use activities and purposes would remain under all alternatives. In addition, the existing ski trails located within the project area south of NM 4 and east of FS 289 (Figure 2) will remain open for public day use.

Fire management activities within the project area may include prescribed burning, wildland fire use for a resource benefit, manual and mechanical thinning, and fire suppression. The Bandelier Fire Management Plan Environmental Assessment/Assessment of Effect (USDI National Park Service 2005a) details the impacts and mitigation measures associated with implementation of fire management activities in the project area.

#### **4.1.2 Impairment Analysis**

In addition to the above impact analyses, NPS Management Policies 2001 (USDI National Park Service 2000) require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act of 1916 (16 U.S.C. § 1- 4) 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 the 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 the park, that discretion is limited by the statutory requirement that the National Park Service must leave the 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 values 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:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS 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 for each impact topic included in this chapter.

#### ***4.2 Impacts to Cultural Resources and §106 of the National Historic Preservation Act***

In this EA/Assessment of Effect, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with CEQ regulations implementing NEPA (40 CFR Parts 1500- 1508). These impact analyses are intended, however, to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to archeological resources and the cultural landscape were identified and evaluated by (1) determining the area of potential effects (APE); (2) identifying cultural resources present in the APE that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate potential adverse effects.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must also be made for affected National Register eligible cultural resources. Under §106 of the NHPA, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resources that qualify 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 reasonable 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 National Park Service's DO-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 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 §106 of the NHPA is similarly reduced. Although adverse effects under §106 of the NHPA may be mitigated, the effect may remain adverse.

A §106 determination summary is included in the conclusion of the impact analysis section for archeological resources for the NPS Preferred Alternative. There are no designated TCPs subject to NHPA identified in the project area, therefore there will not be a §106 determination summary included under ethnographic resources. The §106 summary is intended to meet the requirements of §106 and is an assessment of effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criteria of adverse effect found in the Advisory Council's regulations. A consultation meeting with the SHPO regarding this project was conducted on February 9, 2005. Upon completion, a copy of this EA will be sent to the SHPO for review and comment to fulfill consultation requirements of §106 of the NHPA.

### 4.3 *Impact Topics*

#### 4.3.1 Soils, Hydrology, and Water Quality

##### **Methodology**

The assessment of impacts uses the general methodology described above and the resource specific information presented here. The area of analysis includes the project area described in Chapter 1 (Figure 2). Because soils and water quality are interrelated in their reactions to the proposed alternatives, a combined analysis was completed. Analysis of the potential intensity of impacts to soils was derived from the available information regarding natural systems and soils of the project area and the monument staff's past observations of the effects of visitor use on soils. Issues considered in the soil analysis include erosion and soil compaction. Issues considered in the hydrology and water quality analysis include water quality and hydrologic system response. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

##### **Intensity of Impact:**

**Negligible:** Soils, hydrology, and water quality would not be affected, or the effects would be either undetectable or if detected, would have effects that would be considered slight and local. No mitigations to offset adverse impact would be necessary.

- Minor:** The effects to soils, hydrology, and water quality would be measurable, but changes would be small and localized. Few mitigation measures for soils would be needed and they would likely be successful. No mitigation measures associated with water quality would be necessary.
- Moderate:** The effect on soils would be readily apparent, likely long term, and result in a change to the soil character and/or function over a relatively wide area. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful. Changes in hydrologic functions and water quality would be measurable, but relatively local. Mitigation measures associated with water quality would be necessary and would likely succeed.
- Major:** The effect on soils would be readily apparent and would substantially change the structure and function of soils over a large area in and out of the monument. Mitigation measures to offset adverse effects would be needed, and their success would be unknown. Changes in hydrologic functions and water quality would be readily measurable, with substantial consequences, and would be measurable on a regional scale. Mitigation measures would be necessary and their success unknown.

## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Effects on soils, hydrology, and water quality from Alternative A would be negligible (adverse or beneficial, short and long-term) for the majority of the project area given continued restrictions on public access, with only localized direct, short-term, adverse, minor impacts from continued ecological monitoring and research activities as described in Chapter 2.

#### *Cumulative Effects*

Under Alternative A, actions may have negligible contributions to cumulative effects, (adverse or beneficial, short and long-term) on soils, hydrology, and water quality in addition to those already resulting from park administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.1.1. Effects of fire management activities on soils and water quality including mechanical thinning of trees on montane meadow locations, and prescribed burn activities such as line preparation, hose lays, foot traffic, and burning have been



separately addressed in the Fire Management Plan EA, but constitute actions which are considered here under cumulative effects.

### *Conclusion*

Under Alternative A, there may be localized negligible to minor adverse direct impacts in the short term from ongoing park administrative activities such as ecological monitoring and fire management activities. Most of the project area would experience negligible impacts (beneficial or adverse). Alternative A may have negligible cumulative impacts to soils, hydrology, and water quality when combined with ongoing park administrative activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Effects on soils, hydrology, and water quality from actions proposed under Alternative B would be negligible to minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, direct, short to long- term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. parking areas, designated trail routes, popular destinations and stopping points). Designated trail routes may focus and increase soil compaction and erosion, but would likely restrict impacts to fewer, more resilient or previously impacted locations selected by management.

#### *Cumulative Effects*

Actions proposed under Alternative B would contribute minor to moderate (i.e. for those high use areas described above) cumulative on soils, hydrology, and water quality in addition to those already ongoing from administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.1.1.

*Conclusion*

Under Alternative B, effects on soils, hydrology, and water quality would be negligible to minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, direct, short to long- term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. parking areas, designated trail routes, popular destinations and stopping points). There may be minor to moderate cumulative impacts when combined with ongoing administrative activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

Alternative C*Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Effects on soils, hydrology, and water quality from actions proposed under Alternative C would be negligible to minor, adverse, and short to long term, over most of the project area with moderate, adverse, direct, short to long- term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. near parking areas and at popular destinations and stopping points). An absence of designated routes may initially disperse impacts, but the majority of foot traffic will likely create a few visible paths which subsequent users will follow. This may create a matrix of paths, some passing through locations potentially more prone to compaction or erosion than routes selected by management.

*Cumulative Effects*

Actions proposed under Alternative C would contribute minor to moderate (i.e. for those high use areas described above), cumulative effects on soils, hydrology, and water quality in addition to those already ongoing from park administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.I.I.

*Conclusion*

Under Alternative C, would be negligible to minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, short to long- term impacts (e.g. soil compaction and erosion from foot traffic) limited to the immediate vicinity of high use areas (e.g. near parking areas and at popular destinations and stopping points).

There may be minor to moderate cumulative impacts when combined with ongoing administrative activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### 4.3.2 Vegetation

#### Methodology

The assessment of impacts uses the general methodology described above and the resource specific information presented here. The area of analysis includes the project area described in Chapter 1 (Figure 2). Analysis of impacts of the alternatives on vegetation was developed through consultation with monument staff knowledgeable in vegetation responses to public recreational use within the monument. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

- Negligible:** No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on the native species populations. The effects would be short- term and on a small scale.
- Minor:** Some individual native plants would be affected by the alternative, and could also affect a relatively minor portion of that species' population or the vegetation community as a whole. Mitigations to offset adverse effects, including specific measures to avoid certain plant species, could be required and would be effective.
- Moderate:** Some individual native plants would be affected by the alternative, and would also affect a sizeable segment of the species' population or the vegetation community as a whole, in the long- term and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful.
- Major:** Considerable long- term effects could occur to native plant populations or vegetation communities, and could affect a relatively large area in the monument. Mitigation measures to offset adverse effects would be required, and the success of the mitigation measures would be unknown.

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## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Effects on vegetation from a no action alternative for the current project would be negligible over the majority of the project area, given continued restrictions on public access, with potential localized adverse, direct, short term impacts due to foot traffic and vegetation trampling from continued ecological monitoring and research activities. These effects would be localized to research plot areas on the Cerro Grande. Overall, the impacts to vegetation from Alternative A would be negligible.

#### *Cumulative Effects*

Actions proposed under the no action alternative would have negligible cumulative impacts on vegetation when combined with impacts from ongoing park administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.1.1.

#### *Conclusion*

Under Alternative A, there would be negligible impacts to vegetation given the current restrictions on public access to the area. There would be negligible cumulative impacts on vegetation when combined with past, present, and future foreseeable actions in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Under Alternative B, impacts to vegetation may be minor, adverse, direct,

and short to long term, over most of the project area with moderate, adverse, direct, short to long- term impacts (e.g. trampling impacts on plants from foot traffic) limited to the immediate vicinity of high use areas (e.g. parking areas, designated trail routes, popular destinations and stopping points). Designated trail routes may focus and increase trampling and mortality of vegetation, but presumably restrict impacts to fewer, more resilient or previously impacted, locations selected by management.

In order to mitigate potential adverse impacts to vegetation, routes would be directed away from any ecologically sensitive areas and if new ground disturbance is required for route designation, such areas would be minimal in width, with a maximum width of 2 feet, and be primarily surficial (i.e., no digging, cut slopes). In the future, minor route changes may be implemented to reduce soil erosion or unforeseen impacts to sensitive or unique cultural and natural resources or to enhance visitor safety and enjoyment. Any potential resource impacts would be monitored through the establishment of photo points of critical areas of potential impact and observational monitoring of project area by monument staff and researchers.

#### *Cumulative Effects*

Actions proposed under Alternative B would contribute only minor to moderate (i.e. for those high use areas described above), adverse, short to long- term, effects on vegetation in addition to those already ongoing from park administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.1.1.

#### *Conclusion*

Under Alternative B, there may be minor to moderate, adverse, direct, short and long term impacts to vegetation from trampling in high use areas. Most impacts would be localized and mitigations would be implemented to monitor any potential impacts. There may be minor to moderate cumulative impacts to vegetation under this alternative when combined with past, present, and future foreseeable actions within the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

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## Alternative C

### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Under Alternative C, impacts to vegetation may be minor, adverse, direct, and short to long term, over most of the project area with moderate, adverse, short to long- term impacts (e.g. trampling impacts on plants from foot traffic) limited to the immediate vicinity of high use areas (e.g. parking areas, popular destinations and stopping points). An absence of designated routes may initially disperse impacts, but the majority of foot traffic will likely create a few visible paths which subsequent users will follow. This may create a matrix of paths, some passing through locations more sensitive to vegetation trampling (e.g. wet meadows) than routes selected by management. This may moderately, adversely, and directly impact these sensitive vegetation areas in the short and long term. In order to minimize the potential of adverse impacts to sensitive vegetation, there would be observational monitoring of project area by monument staff and researchers.

### *Cumulative Effects*

Actions proposed under Alternative C would contribute only minor to moderate (i.e. for those high use areas described above) cumulative effects on vegetation when combined with impacts from ongoing park administrative activities (i.e. ecological monitoring, research, and fire management) previously described in Chapter 2 and in Section 4.1.1.

### *Conclusion*

Under Alternative C, there may be minor to moderate, adverse, direct, short and long term impacts to vegetation from trampling in high use areas. The lack of designated routes may moderately, adversely, and directly impact certain sensitive vegetation locations (e.g., wet meadows) in the short and long term. There may be minor to moderate cumulative impacts to vegetation under this alternative when combined with impacts from ongoing park administrative activities (i.e. ecological monitoring, research, and fire management) previously described.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### 4.3.3 Wildlife

#### Methodology

This analysis discusses impacts to general wildlife species. A discussion of impacts to special status species, including federally listed threatened and endangered species is found in Section 4.4.4. This assessment of impacts uses the general methodology described above and the resource specific information presented here. The area of analysis includes the project area described in Chapter 1 (Figure 2). Analysis of impacts of the alternatives on wildlife was developed through consultation with monument staff knowledgeable in wildlife responses in terms of habitat use and population dynamics to public recreational use within the monument. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

- Negligible:** Wildlife would not be affected or there would be no observable or measurable impacts to wildlife species populations (in terms of number of individuals and population structure), habitats, or the natural processes sustaining them. Any impacts would be well within the range of natural fluctuations.
- Minor:** Effects to wildlife would be detectable, but localized, and would be small and of little consequence to the species' population or wildlife community. Population numbers and/or population structure for species may have small, short- term changes, but long- term characteristics remain stable and viable. Mitigation measures, if needed, would be simple and successful.
- Moderate:** Effects to wildlife would be readily detectable, but localized and limited in extent. There may be consequences at the population level or within the wildlife community, but adverse impacts would eventually reverse. Population numbers and/or population structure for species may have short- term changes, but would be expected to trend to pre- impact numbers and remain stable and viable in the long- term. Mitigation measures, if needed, would be extensive and likely successful.
- Major:** Effects to wildlife would be obvious and long- term, and would have substantial consequences to wildlife populations and communities in the region. Population numbers and/or population structure for species might have large, short- term declines with long- term population numbers significantly changed from natural fluctuations. Extensive mitigation measures would be needed to offset any adverse impacts and their effectiveness would be unknown.

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## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. There would be negligible direct or indirect impacts to wildlife populations or their habitat throughout the project area. Specifically, both short and long term impacts to wildlife may include specific individuals moving short distances (tens of meters) in response to human walking activity but would likely remain at their approximate current densities due to administrative use of the project area. Most changes in wildlife would be due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to wildlife species populations (in terms of numbers of individuals and population structure) would be direct and indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning are anticipated activities within the project area that potentially could add to any effects on wildlife (described briefly in Chapter 2 and in Section 4.1.1). The impacts due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Thus, the cumulative effects of Alternative A combined with activities such as prescribed fire and tree thinning are likely to be negligible to minor.

#### *Conclusion*

Under Alternative A, there may be negligible direct and indirect, short and long term impacts to wildlife. Some individuals would move short distances in response to human activity, but would remain at their current densities. There may be negligible to minor cumulative effects under this alternative when combined with actions such as certain fire management activities ongoing within the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.



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## Alternative B—NPS Preferred Alternative

### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Under this alternative, most human disturbance would be along the designated routes, with minor foot traffic dispersed across the project area. Although the impacts would be relatively greater along designated routes, these changes would have negligible direct or indirect impacts to wildlife populations or their habitat throughout the project area. Specifically, both short- and long- term impacts to wildlife may include individuals moving short distances (tens of meters) in response to human sounds and walking activity. Such displacement impacts are likely to be intermittent and variable in location and timing and be short- term in duration. Because the low number of visitors expected to visit the project area in comparison to those that visit Frijoles Canyon, impacts would likely remain negligible and at levels comparable to administrative use of the project area. Most changes in wildlife would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to wildlife species populations (in terms of numbers of individuals and population structure) would be direct, indirect, and negligible.

### *Cumulative Effects*

Prescribed fire and tree thinning are anticipated activities within the project area that potentially could add to any effects on wildlife (described briefly in Chapter 2 and in Section 4.1.1). The impacts due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Thus, the cumulative effects of Alternative B combined with fire management activities such as prescribed fire and tree thinning are likely to be negligible to minor.

### *Conclusion*

Under Alternative B, there may be negligible, direct and indirect, short and long term impacts to wildlife. Some individuals may disperse short distances in response to human presence, but overall population densities would not change. There may be negligible to minor cumulative effects when combined with past, present, and future foreseeable activities in the project area, especially fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of

the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. There may be negligible direct or indirect impacts to wildlife populations or their habitat throughout the project area. Specifically, both short and long term impacts to wildlife may include some individuals moving short distances (tens of meters) in response to human sounds and walking activity. Such displacement impacts are likely to be intermittent and variable in location and timing and be short- term in duration. Because the low number of visitors expected to visit the project area in comparison to those that visit Frijoles Canyon, impacts would likely remain negligible and at levels comparable to administrative use of the project area. Most changes to wildlife populations would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to wildlife species populations (in terms of numbers of individuals and population structure) would be direct and indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning are anticipated activities within the project area that potentially could add to any effects on wildlife (described briefly in Chapter 2 and in Section 4.1.1). The impacts due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Thus, the cumulative effects of Alternative C when combined with such activities as prescribed fire and tree thinning are likely to be negligible to minor.

#### *Conclusion*

Under Alternative C, there may be negligible direct and indirect, short and long term impacts to wildlife. Some individuals may disperse short distances in response to human presence, but overall population densities would not change. There may be negligible to minor cumulative effects when combined with past, present, and future foreseeable activities in the project area, especially fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a

goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### 4.3.4 Special Status Species

##### Methodology

This analysis discusses impacts to special status species that may be found in the project area, as discussed in Chapter 3, Section 3.2.4. Special status species include: 1) species federally listed as threatened or endangered under the Endangered Species Act of 1973, as amended (ESA); 2) species that are proposed or are candidates for listing under ESA or federal species of concern that are not protected pursuant to ESA but are monitored for conservation status; and 3) State of New Mexico listed threatened or endangered species. Table 8 lists the special status species that are likely to occur within the project area.

Table 8. Special status species that may occur in the Bandelier project area.

Common Name	Scientific Name	Federal Status <sup>1</sup>	State Status <sup>2</sup>
American peregrine falcon	<i>Falco peregrinus anatum</i>	SC	T
Bald Eagle	<i>Haliaeetus leucocephalis</i>	LE (partial status)	T
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	LT	
Northern Goshawk	<i>Accipter gentiles</i>	SC	
Goat Peak Pika	<i>Ochotona princes nigrescens</i>	SC	
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC	T
Spotted Bat	<i>Euderma maculatum</i>		T
Jemez Mountains Salamander	<i>Plethodon neomexicanus</i>	SC	E
Mountain (wood) Lily	<i>Lilium philadelphicum</i> var. <i>andinum</i>		E
Yellow Lady's Slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>		E

<sup>1</sup> Federal status under the ESA: LE = Endangered; LT = Threatened; SC = Species of Concern.

<sup>2</sup> New Mexico State status: E = Endangered; T = Threatened.

Analysis of impacts of the alternatives on special status species was developed through consultation with monument staff. Wildlife responses to public recreational use within the monument were analyzed in terms of habitat use and population dynamics. Plant responses to public recreational use within the monument were analyzed in terms of population dynamics and viability. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

- Negligible:** No special status species would be affected (either adversely or beneficially) or the alternative would affect an individual of a special status species or its critical habitat, but the effect would not be of measurable or perceptible consequence to the protected individual or its population. Negligible effect would equate to a “no effect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.
- Minor:** The alternative would affect an individual(s) of a special status species or its critical habitat, but the effect would be small and limited in extent. Adverse impacts would reverse, and the resource would recover. Minor effect would equate to a “may affect, not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.
- Moderate:** An individual or population of a special status species, or its critical habitat, would be noticeably affected. The effect could have some long-term consequence to the individual, population, or habitat. Moderate affect would equate to a “may affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended, and would be accompanied by a statement of “likely to adversely affect...” or “not likely to adversely affect” the species.
- Major:** An individual or population of a special status species, or its critical habitat, would be noticeably affected with a long-term, vital consequence to the individual, population, or habitat. Major effect would equate to a “may affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended, and would be accompanied by a statement of “likely to adversely affect...” or “not likely to adversely affect” the species.

#### **4.3.4.1 Threatened and Endangered Species and Federal Species of Concern**

Table 8 lists the bald eagle and Mexican spotted owl as likely to occur within the project area. Federal species of concern that are likely to occur in the project area are also included in this section. There are no proposed or candidate species that are likely to occur in the project area.

#### **Threatened and Endangered Species**

##### **Bald Eagle**

##### **Alternative A—No Action Alternative**

*Impact Analysis*

Under Alternative A, there are no proposed changes in management of the project area. Because Bald Eagles only occasionally use the project area in winter, with no breeding and no fishing habitat in the project area, impacts would take the form of displacing Bald Eagles from tree perches or from scavenged food on the ground. Such displacement impacts to non-breeding Bald Eagles would be rare and would continue under this alternative due to on-going administrative activities. The adverse impact on Bald Eagle behavior of such displacements would be direct, indirect, and negligible both over the short and long term. Changes in Bald Eagle use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Bald Eagle populations (in terms of numbers of individuals and population structure) would be negligible.

*Cumulative Effects*

Prescribed fire and tree thinning are anticipated activities within the project area that potentially could add to any effects on Bald Eagles (described briefly in Chapter 2 and in Section 4.1.1). The impacts on habitat due to prescribed fire and tree thinning, however, are planned to be negligible or minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning will not alter the lack of breeding and fishing habitat for Bald Eagles in the project area. Thus, the cumulative effects of Alternative A and prescribe fire and tree thinning on Bald Eagles are likely to be negligible to minor.

*Conclusion*

Under Alternative A, there may be negligible, adverse, direct and indirect, short and long term impacts to Bald Eagles. There may be negligible to minor cumulative effects to Bald Eagles when combined with past, present, and future foreseeable activities, such as certain fire management activities. These impacts would equate to a "may affect, not likely to adversely affect" determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

Alternative B—NPS Preferred Alternative*Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across non- cliff areas of the project area. Impacts would take the form of displacing Bald Eagles from tree perches or from scavenged food on the ground. Because Bald Eagles only occasionally use the project area in winter and the area contains no breeding and no fishing habitat, impacts to Bald Eagles are likely to be negligible over the short and long term. Although the impacts would be relatively greater along designated routes, these changes would have negligible direct or indirect changes to Bald Eagles. Most changes in Bald Eagle use would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Bald Eagle populations (in terms of numbers of individuals and population structure) would be direct, indirect, and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Bald Eagles . The impacts on habitat due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribe fired and tree thinning will not alter the lack of breeding and fishing habitat for Bald Eagles in the project area. Thus, the cumulative effects of Alternative B when combined with such activities as prescribed fire and tree thinning on Bald Eagles are likely to be negligible to minor.

#### *Conclusion*

Under Alternative B, there may be negligible, adverse, direct and indirect, short and long term impacts to Bald Eagles. There may be negligible to minor cumulative effects to Bald Eagles when combined with past, present, and future foreseeable activities, such as certain fire management activities. These impacts would equate to a "may affect, not likely to adversely affect" determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

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## Alternative C

### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Because Bald Eagles only occasionally use the project area in winter and the area contains no breeding and no fishing, impacts would take the form of displacing Bald Eagles from tree perches or from scavenged food on the ground. Any impacts to Bald Eagle behavior from such displacements would be direct and indirect and negligible both over the short and long term. Because the low number of visitors expected to visit the project area during winter months, impacts would likely remain negligible and at levels comparable to administrative use of the project area. Most changes in Bald Eagle use would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Bald Eagle populations (in terms of numbers of individuals and population structure) would be negligible.

### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Bald Eagles. The impacts on habitat due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribe fire and tree thinning will not alter the lack of breeding and fishing habitat for Bald Eagles in the project area. Thus, the cumulative effects of Alternative C when combined with past, present and future foreseeable actions, such as prescribed fire and tree thinning on Bald Eagles are likely to be negligible to minor.

### *Conclusion*

Under Alternative C, there may be negligible, direct and indirect, short and long term impacts to Bald Eagles. There may be negligible to minor cumulative effects to Bald Eagles when combined with past, present, and future foreseeable activities, such as certain fire management activities. These impacts would equate to a "may affect, not likely to adversely affect" determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

## Mexican Spotted Owl

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Survey results over the past ten years suggest that Mexican Spotted Owl use in the project area is occasional to rare and only in the steep trail-free areas of Frijoles Canyon in close proximity to cliffs. The monument has not documented any Spotted Owl occurrence within the project area outside of habitats associated with cliffs in the main stem of Frijoles Canyon. On-going annual surveys should detect any breeding Spotted Owls in the park. If Spotted Owls are detected in the project area, administrative activities would be altered if needed to insure that short term and long term disturbance to Spotted Owls would be unlikely. Thus, most changes in Spotted Owl use would be due to natural fluctuations or natural successional changes in habitat. Over both the short- and long-term, impacts to Spotted Owl populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Mexican Spotted Owls. The impacts on Spotted Owl habitat in the project area due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). As a result of consultation between Bandelier and the U.S. Fish and Wildlife Service (USFWS) on the potential impacts of the Fire Management Plan, the USFWS issued a Biological Opinion (USFWS 2005b) which the park shall follow to minimize impacts to Spotted Owls. Thus, the cumulative effects of Alternative A when combined with such activities as prescribed fire and tree thinning on Mexican Spotted Owls are likely to be negligible to minor.

#### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to the Mexican Spotted Owl. Cumulative impacts may be negligible to minor when combined with fire management activities in the project area. These impacts would equate to a "may affect, not likely to adversely affect" determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a



goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across the project area. Survey results over the past ten years suggest that Mexican Spotted Owl use in the project area is occasional to rare and only in the steep trail- free areas of Frijoles Canyon, not in areas with proposed routes. On- going annual surveys should detect any breeding Spotted Owls in the park. If Spotted Owls are detected in the project area, both administrative activities and public access would be altered if needed to insure that short term and long term disturbance to Spotted Owls would be unlikely. Because the number of visitors expected to visit the steep trail- free areas of Frijoles Canyon within the project area, impacts would likely remain negligible. Most changes in Mexican Spotted Owl use would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Mexican Spotted Owl populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Mexican Spotted Owls. The impacts on Spotted Owl habitat in the project area from prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). As a result of consultation between Bandelier and the USFWS on the potential impacts of the Fire Management Plan, the USFWS issued a Biological Opinion (USFWS 2005b) which the park shall follow to minimize impacts to Spotted Owls. Thus, the cumulative effects of Alternative B when combined with such activities as prescribed fire and tree thinning on Mexican Spotted Owls are likely to be negligible to minor.

#### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to the Mexican Spotted Owl. There may be negligible to minor cumulative impacts when combined with fire management activities. These impacts would equate to a "may affect,

not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument’s resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Survey results over the past ten years suggest that Mexican Spotted Owl use in the project area is occasional to rare and only in the steep trail- free areas of Frijoles Canyon associated with cliffs. On- going annual surveys should detect any breeding Spotted Owls in the project area. If Spotted Owls are detected in the project area, both administrative activities and public access would be altered if needed to insure that short term and long term disturbance to Spotted Owls would be unlikely. Because the low number of visitors expected to visit the steep trail- free areas of Frijoles Canyon within the project area in comparison to those that visit Frijoles Canyon, impacts would likely remain negligible. Most changes in Mexican Spotted Owl use would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Mexican Spotted Owl populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Mexican Spotted Owls. The impacts on Spotted Owl habitat in the project area due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier’s Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). As a result of consultation between Bandelier and the USFWS on the potential impacts of the Fire Management Plan, the USFWS issued a Biological Opinion (USFWS 2005b) which the park shall follow to minimize impacts to Spotted Owls. Thus, the cumulative effects of Alternative B and prescribe fire and tree thinning on Mexican Spotted Owls are likely to be negligible to minor.

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*Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to Mexican Spotted Owls. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area. These impacts would equate to a “may affect, not likely to adversely affect” determination for section 7 consultation under the Endangered Species Act of 1973, as amended.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument’s resources or values under this alternative.

**Federal Species of Concern****Northern Goshawk****Alternative A—No Action Alternative***Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.I, *Actions Common to All Alternatives* would continue. Northern Goshawks typically required forest habitats for hunting that have sparse ground cover and open understories. Much of the project area has forests that are more dense than optimal for this species. Survey results over the past five years suggest that Northern Goshawk use in the project area is uncommon with no known nesting locations. If Northern Goshawk are detected or reported in the project area, administrative activities would be altered if needed to insure that short term and long term impacts to nesting Northern Goshawks would be unlikely. Thus, most changes in Northern Goshawk use would be due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Northern Goshawk populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

*Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.I.I) are anticipated activities within the project area that potentially could add to any effects on Northern Goshawk. The impacts on Northern Goshawk habitat in the project area due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier’s Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Habitat changes due to fire could be beneficial by decreasing tree density in the forests within the project area. Overall, the cumulative

effects of Alternative A and prescribe fire and tree thinning on Northern Goshawk are likely to be negligible to minor.

### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to the Northern Goshawk. There may be negligible to minor cumulative impacts, when combined with certain fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across the project area. Northern Goshawks typically require forest habitats for hunting that have sparse ground cover and open understories. Much of the project area has forests that are more dense than optimal for this species. Survey results over the past five years suggest that Northern Goshawk use in the project area is uncommon with no known nesting locations. Hiking- style recreation may cause short-term displacement of individual birds. Repeated displacement of nesting birds could produce undesirable impacts to reproduction, although there are no known nests in the project area. If nesting Northern Goshawks are detected in the project area, both administrative activities and public access may be altered, if needed, to ensure that short term and long term impacts to nesting goshawks would be unlikely. Thus, most changes in Northern Goshawk use would be due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Northern Goshawk populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on

Northern Goshawk. The impacts on Northern Goshawk habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Habitat changes due to fire could be beneficial by decreasing tree density in the forests within the project area. Overall, the cumulative effects of Alternative B and prescribe fire and tree thinning on Northern Goshawk are likely to be negligible to minor.

### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to the Northern Goshawk. There may be negligible to minor cumulative impacts when combined with some fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Northern Goshawks typically required forest habitats for hunting that have sparse ground cover and open understories. Much of the project area has forests that are more dense than optimal for this species. Survey results over the past five years suggest that Northern Goshawk use in the project area is uncommon with no known nesting locations. The dispersed nature of recreation under this alternative may cause displacement of individual goshawks at a low frequency. If nesting Northern Goshawks are detected in the project area, both administrative activities public access would be altered if needed to ensure that short term and long term impacts to the breeding birds would be unlikely. Thus, most changes in Northern Goshawk use would be due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Northern Goshawk populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning(described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Northern Goshawk. The impacts on Northern Goshawk habitat in the project area due

to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Habitat changes due to fire could be beneficial by decreasing tree density in the forests within the project area. Overall, the cumulative effects of Alternative C when combined with such activities as prescribed fire and tree thinning on Northern Goshawk are likely to be negligible to minor.

### *Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to the Northern Goshawk. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

## **Goat Peak Pika**

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Goat Peak pikas use high elevation rocky habitats and boulder fields near grasslands. People rarely physically disturb core pika habitat and rarely displace pikas from their network of tunnels below a boulder field. Any impacts on Goat Peak pika behavior from such rare visits by people would be negligible and indirect, both over the short and long term. Thus, changes in Goat Peak pika use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short- and long- term, impacts to Goat Peak pika populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Goat Peak pikas. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are planned to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning are likely to improve Goat Peak pika habitat by increasing the area of grasslands available for feeding and by increasing the

productivity of existing grasslands through fire- induced nutrient recycling. The cumulative effects of Alternative A when combined with certain fire management activities such as prescribed fire and tree thinning on Goat Peak pikas are likely to be negligible to minor.

### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to the Goat Peak pika. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across non- cliff areas of the project area. Goat Peak pikas use high elevation rocky habitats and bolder fields near grasslands. People rarely physically disturb core pika habitat and rarely displace pikas from their network of tunnels below a bolder field. The relative impact of Alternative B on Goat Peak pikas may be greater than for Alternative A, but the impacts would be still be negligible over both the short and long term. Thus, changes in Goat Peak pika use would be predominantly due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Goat Peak Pika populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Goat Peak pikas. The impacts on habitat due in the project area to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service

2005a). Furthermore, prescribed fire and tree thinning are likely to improve Goat Peak pika habitat by increasing the area of grasslands available for feeding and by increasing the productivity of existing grasslands through fire- induced nutrient recycling. Thus, the cumulative effects of Alternative B when combined with fire management activities such as prescribed fire and tree thinning on Goat Peak pikas are likely to be negligible to minor.

### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to Goat Peak pikas. There may be negligible to minor cumulative impacts when combined with some fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Most public use would be dispersed across non- cliff areas of the project area. Goat Peak pikas use high elevation rocky habitats and bolder fields near grasslands. People rarely physically disturb core pika habitat and rarely displace pikas from their network of tunnels below a bolder field. Any impacts on Goat Peak pika behavior from such rare visits by people would be negligible both over the short and long term. Thus, changes in Goat Peak pika use would be predominantly due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Goat Peak pika populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Goat Peak pikas. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning will likely to improve Goat Peak pika habitat by increasing the area of grasslands available for feeding and by increasing



the productivity of existing grasslands through fire- induced nutrient recycling. Thus, the cumulative effects of Alternative C when combined with certain fire management activities such as prescribed fire and tree thinning on Goat Peak pikas are likely to be negligible to minor.

### *Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to the Goat Peak pika. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **4.3.4.2 State Listed Species**

Table 4- 1 lists the Peregrine Falcon, spotted bat, Jemez Mountains salamander, and mountain (wood) lily, and yellow lady's slipper as likely to occur within the project area.

### **American Peregrine Falcon**

#### Alternative A—No Action Alternative

### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Peregrine Falcons nest on cliffs and hunt primarily for flying birds. These falcons only occasionally or rarely use near- ground places, such as trees for short- term roosts, within the project area. The project area contains no known Peregrine Falcon breeding sites. Impacts to the species could rarely take the form of displacing Peregrine Falcons from tree perches. Such rare displacement impacts to Peregrine Falcons would continue under this alternative from on- going administrative activities. Any potential impacts on Peregrine Falcon behavior from such displacements would be negligible both over the short and long term. Changes in Peregrine Falcon use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Peregrine Falcon populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Peregrine Falcons. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribe fire and tree thinning will not alter the lack of suitable breeding habitat for Peregrine Falcons in the project area. Thus, the cumulative effects of Alternative A when combined with certain fire management activities such as prescribed fire and tree thinning on Peregrine Falcons are likely to be negligible to minor.

### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to the American Peregrine Falcon. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along designated routes, with minor foot traffic dispersed across non- cliff areas of the project area. The project area contains no Peregrine Falcon breeding sites. Impacts to the species would be rare and would likely take the form of displacing Peregrine Falcons from tree perches. The rate of such displacement impacts to Peregrine Falcons may increase under this alternative when compared with Alternative A (continue current management), but would likely remain rare. Any potential impacts to Peregrine Falcon behavior from such displacements would be negligible both over the short and long term. Changes in Peregrine Falcon use would be predominantly due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Peregrine Falcon populations (in

terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Peregrine Falcons. The impacts on habitat in the project are due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribe fire and tree thinning will not alter the lack of suitable breeding habitat for Peregrine Falcons in the project area. Thus, the cumulative effects of Alternative B when combined with certain fire management activities such as prescribed fire and tree thinning on Peregrine Falcons are likely to be negligible to minor.

#### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to the American Peregrine Falcon. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative C

##### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Minor foot traffic would be dispersed across non- cliff areas of the project area. The project area contains no Peregrine Falcon breeding sites. Impacts to the species would likely take the form of rarely displacing Peregrine Falcons from tree perches. Such displacement impacts to Peregrine Falcons may be increased under this alternative when compared to Alternative A (continue current management), but would likely remain rare. Thus, any potential impacts to Peregrine Falcon behavior from such displacements would be negligible both over the short and long term. Changes in Peregrine Falcon use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Peregrine Falcon

populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Peregrine Falcons. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribe fire and tree thinning will not alter the lack of suitable breeding habitat for Peregrine Falcons in the project area. Thus, the cumulative effects of Alternative C when combined with certain fire management activities such as prescribed fire and tree thinning on Peregrine Falcons are likely to be negligible to minor.

#### *Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to the American Peregrine Falcon. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **Spotted Bat**

#### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Spotted bats roost by day in rock crevices located on cliffs and canyon walls. Such crevices within the project area are likely to experience no human disturbance with the continuation of current management actions. If any human impact did cause displacement from crevices within the project area, the impact would likely be localized and would likely involve relatively few individuals. Thus impacts would be negligible both over the short and long term. Changes in spotted bat use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to spotted bat populations (in

terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on spotted bats. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning would not alter crevice roosting habitat for spotted bats in the project area. Thus, the cumulative effects of Alternative A when combined with certain fire management activities such as prescribed fire and tree thinning on spotted bats are likely to be negligible to minor.

#### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to spotted bats. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative B—NPS Preferred Alternative

##### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across non- cliff areas of the project area. Spotted bats roost by day in rock crevices located on cliffs and canyon walls. Such crevices within the project area are likely to experience no increase in human disturbance with opening the project area to dispersed foot traffic. Furthermore, the proposed designated routes are well away from cliffs and canyon walls where spotted bats may roost. If any human impact did cause displacement from crevices within the project area, the impact would likely be localized and would likely involve relatively few individuals. Thus, impacts would

negligible both over the short and long term. Changes in spotted bat use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to spotted bat populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Spotted Bats. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning would not alter crevice roosting habitat for spotted bats in the project area. Thus, the cumulative effects of Alternative B when combined with certain fire management activities such as prescribed fire and tree thinning on spotted bats are likely to be negligible to minor.

#### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to the spotted bat. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Foot traffic would likely be dispersed across non- cliff parts of the project area. Spotted bats roost by day in rock crevices located on cliffs and canyon walls. Such crevices within the project area are likely to experience no increase in human disturbance with opening the project area to dispersed foot traffic. If any human impact did cause displacement from crevices within the project area, the impact would likely be localized and would likely involve relatively few individuals. Thus impacts would negligible both over the short and long term. Changes in spotted bat use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and

long term, impacts to spotted bat populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on spotted bats. The impacts on habitat in the project area due to prescribed fire and tree thinning, however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Furthermore, prescribed fire and tree thinning would not alter crevice roosting habitat for spotted bats in the project area. Thus, the cumulative effects of Alternative C when combined with certain fire management activities such as prescribed fire and tree thinning on spotted bats are likely to be negligible to minor.

#### *Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to spotted bats. There may be negligible to minor cumulative impacts when combined with some fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **Jemez Mountains Salamander**

#### Alternative A—No Action Alternative

##### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Jemez Mountains salamanders live in the soil and under fallen logs of rocky habitats within the project area. They are only found near the surface during wet summer months; during dry or cold periods these salamanders retreat to protected areas relatively deep in the ground. Soil compaction from machinery or increased soil temperatures from fire can negatively impact these salamanders. Such impacts are not anticipated from the continuation of current management which limits access to administrative uses within the project area. Thus, changes in Jemez Mountains salamander habitat use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Jemez Mountains salamander populations (in terms of numbers of

individuals and population structure) from Alternative A would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire, wildland fire use for a resource benefit (WFURB), and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Jemez Mountain Salamanders. The impacts on habitat in the project area due to prescribed fire, WFURB activities, and tree thinning however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Specifically, any prescribe fire or thinning activities or WFURB event would likely be done during periods of the year when the Jemez Mountains salamanders are not near the soil surface. Thus, the cumulative effects of Alternative A when combined with prescribed fire, thinning activities, and WFURB events on Jemez Mountain Salamanders are likely to be negligible to minor.

#### *Conclusion*

Under Alternative A, there may be negligible, indirect, short and long term impacts to the Jemez Mountains salamander. There may be negligible to minor cumulative impacts when combined with certain fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Most public use would be along the designated routes, with minor foot traffic dispersed across non- cliff areas of the project area. Jemez Mountains salamanders live in the soil and under fallen logs of rocky habitats within the project area. They are only found near the surface during wet summer months; during dry or cold periods these salamanders retreat to protected areas relatively deep in the ground. Soil compaction from machinery or increased soil temperatures from fire can negatively



impact these salamanders. Such impacts are not anticipated from opening the project area to unconfined hiking or hiking along routes. Soil compaction due to walking visitors and administrative activities on food is likely to be negligible. Thus, changes in Jemez Mountains salamander habitat use would be predominantly due to natural fluctuations or natural successional changes in habitat and food availability. Over both the short and long term, impacts to Jemez Mountains salamander populations (in terms of numbers of individuals and population structure) under Alternative B would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire, wildland fire use for a resource benefit (WFURB), and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Jemez Mountain Salamanders. The impacts on habitat in the project area due to prescribed fire, WFURB activities, and tree thinning however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Specifically, any prescribe fire or thinning activities or WFURB event would likely be done during periods of the year when the Jemez Mountains salamanders are not near the soil surface. Thus, the cumulative effects of Alternative B when combined with prescribed fire, thinning activities, and WFURB events on Jemez Mountain Salamanders are likely to be negligible to minor.

#### *Conclusion*

Under Alternative B, there may be negligible, indirect, short and long term impacts to the Jemez Mountains salamander. There may be negligible to minor cumulative impacts when combined with certain fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative C

##### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Jemez Mountains salamanders live in the soil and under fallen logs of rocky habitats within the project area. They are only found near the surface during wet summer months; during dry or cold periods these salamanders retreat to protected areas relatively deep in the ground.

Soil compaction from machinery or increased soil temperatures from fire can impact these salamanders. Such impacts are not anticipated from opening the project area to unconfined hiking. Soil compaction due to walking visitors and administrative activities on food is likely to be negligible. Thus, changes in Jemez Mountains salamander use would be predominantly due to natural fluctuations or natural successional changes in habitat. Over both the short and long term, impacts to Jemez Mountains salamander populations (in terms of numbers of individuals and population structure) would be indirect and negligible.

#### *Cumulative Effects*

Prescribed fire, wildland fire use for a resource benefit (WFURB), and tree thinning (described briefly in Chapter 2 and in Section 4.1.1) are anticipated activities within the project area that potentially could add to any effects on Jemez Mountain Salamanders. The impacts on habitat in the project area due to prescribed fire, WFURB activities, and tree thinning however, are anticipated to be negligible to minor based on Bandelier's Fire Management Plan and Environmental Assessment (USDI National Park Service 2005a). Specifically, any prescribe fire or thinning activities or WFURB event would likely be done during periods of the year when the Jemez Mountains salamanders are not near the soil surface. Thus, the cumulative effects of Alternative C when combined with prescribed fire, thinning activities, and WFURB events on Jemez Mountain Salamanders are likely to be negligible to minor.

#### *Conclusion*

Under Alternative C, there may be negligible, indirect, short and long term impacts to the Jemez Mountains salamander. There may be negligible to minor cumulative impacts when combined with certain fire management activities in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **Mountain (Wood) Lily**

#### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Alternative A would have negligible effects on wood lily given no change in public access to locations where this species is known to occur.

*Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

*Conclusion*

Under Alternative A, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the wood lily, as there would be no change in public access to known locations of this species.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

Alternative B—NPS Preferred Alternative*Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Alternative B would have negligible impacts (direct and indirect, short and long term) on wood lily given that the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

*Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

*Conclusion*

Under Alternative B, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the wood lily, as the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Alternative C would have negligible (direct and indirect, short and long- term) on Wood Lily given that the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

#### *Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

#### *Conclusion*

Under Alternative C, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the wood lily, as the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

## **Yellow Lady's Slipper**

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would

continue. Alternative A would have negligible (direct and indirect, short and long-term) effects on lady slipper given no change in public access to locations where this species is known to occur.

#### *Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

#### *Conclusion*

Under Alternative A, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the lady slipper, as there would be no change in public access to known locations of this species.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. There may be an additional parking area developed adjacent to FR 289 accessing the Alamo Boundary Route, depending on public use over the next three to five years. Alternative B would have negligible (direct and indirect, short and long-term) effects on lady slipper given that the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

#### *Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

#### *Conclusion*

Under Alternative B, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the lady slipper, as the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Alternative C would have negligible (direct and indirect, short and long- term) effects on lady slipper given that the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

#### *Cumulative Effects*

No cumulative effects are anticipated given negligible effects of the proposed action and absence of any ongoing administrative or public use activities in areas of potential habitat for this species within the project area.

#### *Conclusion*

Under Alternative C, there may be negligible direct and indirect, short and long term impacts and no anticipated cumulative impacts to the lady slipper, as the occurrence of this species is either outside the project area above NM 4 or in canyon locations below NM 4 not easily accessible by the public.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **4.3.5 Archeological Resources**

## Methodology

The assessment of impacts uses the general methodology described above and the resource specific information presented here. The area of potential effect (APE) is the entire project area as shown in Figure 2. For the purposes of analyzing impacts to archeological resources either listed in or eligible for listing in the National Register, the context and intensity of impacts, as defined below, are discussed in the following analysis. Due to the non-renewable nature of archeological resources, the duration of impacts may be permanent.

Please note that an adverse impact, as described in the following intensity definitions and impact analyses, does not necessarily constitute an adverse impact under §106 of the NHPA. The terms “adverse effect or adverse impact” apply to the NEPA context only unless otherwise stated in the impact analyses.

### Intensity of Impact:

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

**Minor:** Adverse—Disturbance of a site(s) that results in little, if any, loss of significance or integrity and the National Register eligibility of the site is unaffected. For the purposes of §106 consultation under the NHPA, the determination of effect would be “no adverse effect”.

Beneficial—Maintenance and preservation of a site(s). The determination of effect for §106 consultation under the NHPA would be “no adverse effect”.

**Moderate:** Adverse—Disturbance of a site(s) results in loss of integrity. Impact is measurable and perceptible. The impact changes one or more character defining features of an archeological resource, but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. The determination of effect for §106 consultation under the NHPA would be “adverse effect”.

Beneficial—Stabilization of a site(s). The determination of effect for §106 consultation under the NHPA would be “no adverse effect”.

**Major:** Adverse—Disturbance of a site(s) results in loss of integrity. The impact is substantial, noticeable, and may be permanent. The impact changes one or more character defining feature(s) of an archeological resource,

diminishing the integrity of the resource to the extent that it is no longer eligible for listing in the National Register. The determination of effect for §106 consultation under the NHPA would be “adverse effect”.

Beneficial—Active intervention, such as stabilization of structures or reduction in fire hazard, to preserve a site(s). The determination for §106 consultation under the NHPA would be “no adverse effect”.

## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, land closures and land management status in the project area would remain in effect. This may have minor to moderate beneficial, direct and indirect impacts due to ongoing vegetative recovery (from past logging and ranching of the area), which will stabilize sites and obscure them from view, thereby promoting site preservation. Artifact theft and site disturbance would be also minimized through the prevention of public access to these lands.

#### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ongoing activities such as ecological research and monitoring as well as fire management activities. Alternative A, when combined with these actions, would have negligible to minor beneficial cumulative impacts on archeological resources from continued vegetative recovery and subsequent site stabilization and preservation. The cumulative beneficial impacts may be less in intensity than the direct and indirect impacts described above because of potential adverse impacts associated with ongoing activities such as fire management. Mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative A.

#### *Conclusion*

Under Alternative A, there may be minor to moderate beneficial, direct and indirect, permanent impacts to archeological resources due to the continuing vegetative recovery and site stabilization and preservation. There may be negligible to minor beneficial cumulative impacts to archeological resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a



goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative B—NPS Preferred Alternative

##### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. On NM 4, two parking areas would be designated along pullouts on the highway and existing paved parking areas at the ski trail and intersection of NM 4 and FR 289 would be utilized under this alternative. In addition, this alternative allows for the potential development of a five- to seven- vehicle graded parking area at the trailhead of the Alamo Boundary Route on FR 289.

There is the potential for adverse impacts to archeological resources under this alternative. For example, opening the area to public use may lead to the theft of artifacts. While most of the archeological sites within this area are subtle and difficult to see at best, illicit collection of artifacts may occur. Visitors may also move artifacts and walking across archeological sites may directly trample or damage some artifacts. However, because artifacts occur in very low densities, this can be considered a minor adverse direct impact.

The establishment of formal hiking routes may include some ground disturbing activities (i.e. route maintenance or development) which may alter the integrity of archeological sites. As stated above, this can be considered a minor adverse impact due to the low density of artifacts and the ability to direct routes away from known archeological sites.

While the designated parking areas along NM 4 would have no effect on archeological resources, the proposed parking area at the trailhead of the Alamo Boundary Route off of FR 289 may have potential minor adverse direct impacts to archeological sites from surface grading activities and other ground disturbance. There would also be an increased risk of artifact theft and site disturbance to those archeological resources located adjacent to the parking area, but it likely would not result in the loss of site significance or integrity. In order to reduce the potential for adverse effects to archeological resources, all sites in the area would be flagged and avoided and an archeological monitor would be present at all times during construction of the parking area.

There may be minor beneficial indirect impacts under Alternative B. The establishment of designated hiking routes would direct people away from archeological sites or sensitive

cultural resources, thereby maintaining and preserving sites. In addition, vegetation would continue to recover in areas outside of designated routes, thereby promoting site stabilization and preservation as described above under Alternative A. Mitigation measures and monitoring would further ensure protection of archeological resources.

#### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ongoing activities such as ecological research and monitoring as well as fire management activities. Alternative B, when combined with these actions, would have minor adverse cumulative impacts, when combined with past, present, and future foreseeable actions such as fire management activities. Mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative B.

#### *Conclusion*

Under Alternative B, there may be minor adverse direct impacts to archeological resources due to artifact theft and ground disturbance. There may also be minor beneficial impacts to sites through stabilization and preservation as described above. Cumulative impacts may be beneficial and adverse and minor.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### *NHPA §106 Determination Summary*

Because there would only be minor adverse direct impacts to archeological resources due to artifact theft and ground disturbance and there would be minor beneficial impacts to sites through stabilization and preservation the determination of effect under §106 consultation under the NHPA for the NPS Preferred Alternative would be "no adverse effect".

#### Alternative C

##### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year-round use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289.

There may be the potential for adverse effects to archeological resources under Alternative C. As described above under Alternative B, opening the area to public use

may lead to the theft of artifacts. While most of the archeological sites within this area are subtle and difficult to see at best, illicit collection of artifacts may occur. Visitors may also move artifacts and walking across archeological sites may directly trample or damage some artifacts. However, because artifacts occur in very low densities, this can be considered a minor adverse direct impact.

The lack of designated routes or trails may also lead to the establishment of social trails. This may adversely affect small portions of archeological sites by impacting undisturbed ground cover and altering intact archeological deposits. This may be considered a minor adverse direct impact. However, in most areas vegetation would continue to recover, thereby promoting site stabilization and preservation as described above under Alternative A.

#### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ingoing activities such as ecological research and monitoring as well as fire management activities. Alternative C would have minor adverse cumulative impacts, when combined with actions such as fire management activities. Mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative C.

#### *Conclusion*

Under Alternative C, there may be minor adverse direct effects to archeological resources due to artifact theft, site disturbance, and dispersed hiking. There may be minor adverse cumulative impacts to archeological resources from the combined effects of implementation of the fire management plan and other ongoing activities. For the purposes of §106 consultation under the NHPA, the determination of effect would be “no adverse effect”.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument’s resources or values under this alternative.

### **4.3.6 Ethnographic Resources**

#### **Methodology**

The assessment of impacts uses the general methodology described above and the resource specific information presented here. For the purposes of analyzing impacts to ethnographic resources, the context and intensity of impacts, as defined below, are discussed in the following analysis.

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**Intensity of Impact:**

- 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(s) would be slight but noticeable but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resources and the affiliated group's body of practices and beliefs.  
Beneficial—Would allow access to and/or accommodate a group's traditional practices or beliefs.
- Moderate:** Adverse—Impact(s) would be apparent and would measurably alter resource conditions, traditional access, site preservation, or the relationship between the resource and the affiliated group's practices or beliefs, even though the group's practices and beliefs would survive.  
Beneficial—Would facilitate traditional access and/or accommodate a group's practice or beliefs.
- Major:** Adverse—Impact(s) would alter resource conditions or block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, to the extent that the survival of a group's practices and beliefs would be jeopardized.  
  
Beneficial—Would encourage traditional access and/or accommodate a group's practices and beliefs.

**Impact Analysis**Alternative A—No Action Alternative*Impact Analysis*

Under Alternative A, lands would remain closed to the general public but access by certain Native American pueblos for traditional use activities and purposes would continue as described in Section 2.1, *Actions Common to All Alternatives*. Consultations with the six pueblos would continue pursuant to the MOU. There would be no adverse, direct or indirect, short or long term impacts on ethnographic resources from the implementation of Alternative A, as resource conditions and site access would not change from current practices and there are no designated TCPs identified in the project area. There may be negligible to minor beneficial, direct and indirect, long term

impacts from Alternative A due to protection of sensitive cultural and ethnographic resources in the project area. Because public access would be prohibited in the project area, there would be very minimal potential for disruption of traditional access and use.

#### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ingoing activities such as ecological research and monitoring as well as fire management activities and the MOU between Bandelier and the six most closely associated Pueblo Groups. Alternative A, when combined with these actions, would have no cumulative impacts on ethnographic resources as resource and site conditions would not change from current practices. Mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative A.

#### *Conclusion*

Under Alternative A, there would be no adverse direct or indirect, short or long term impacts from implementation. There may be negligible to minor beneficial, direct and indirect, long term impacts from Alternative A due to protection of sensitive cultural and ethnographic resources in the project area. There would be no cumulative impacts to ethnographic resources from implementation of Alternative A.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. These routes would be unimproved, low standard and primitive, utilizing existing game trails and logging skid trails with minimal ground disturbance. Because lands would be open to general public access, there may be negligible to minor adverse, direct, short term and long term impacts to ethnographic resources. There may be some disruptions of traditional use activities from hikers, in terms of noise and presence, during daytime hours but it would not appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resources and the affiliated group's body of practices and beliefs. There are no designated TCPs identified in the project area. There may be beneficial minor, direct, short and long term impacts as the Cerro Grande Route and Alamo Boundary Route

and designated parking areas (e.g., along FR 289) would be constructed to avoid any sensitive cultural or ethnographic resources. These routes would direct the general public away from any potential areas of ethnographic concern, thereby protecting sensitive resources.

### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ingoing activities such as ecological research and monitoring as well as fire management activities and the MOU between Bandelier and the six most closely associated Pueblo Groups. Alternative B, when combined with these actions, would have negligible adverse cumulative impacts on ethnographic resources as mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative B and opening of public lands would not alter the impacts of ongoing ecological research and monitoring activities.

### *Conclusion*

Under Alternative B, there may be negligible to minor adverse, direct, short term and long term impacts to ethnographic resources due to public use of the area. There may be beneficial minor, direct, short and long term impacts as the Cerro Grande Route and Alamo Boundary Route would direct the general public away from any potential areas of ethnographic concern, thereby protecting sensitive resources. There may be negligible cumulative impacts to ethnographic resources under Alternative B.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. As described in Alternative B, there may be negligible to minor adverse, direct, short and long term impacts to ethnographic resources from hikers, in terms of noise and presence, during daytime hours but it would not appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resources and the affiliated group's body of practices and beliefs. There are no designated TCPs identified in the project area. Because no routes would be designated, hikers would not necessarily be directed away from sensitive cultural and ethnographic resources, thereby increasing

the likelihood of artifact theft and site disruption. However, the potential for these occurrences is very low. It is estimated that artifact theft and site disturbance occurs in less than 10% of sites of nearly 3,000 total recorded archeological sites within Bandelier.

#### *Cumulative Effects*

As described in Chapter 2 and in Section 4.1.1, past, present, and future foreseeable actions within the project area include ingoing activities such as ecological research and monitoring as well as fire management activities and the MOU between Bandelier and the six most closely associated Pueblo Groups. Alternative C, when combined with these actions, would have negligible adverse cumulative impacts on ethnographic resources as mitigation measures and ongoing consultation efforts under the Fire Management Plan would not change from the implementation of Alternative B and opening of public lands would not alter the impacts of ongoing ecological research and monitoring activities.

#### *Conclusion*

Under Alternative C, there may be negligible to minor adverse, direct, short and long term impacts to ethnographic resources from public use of lands in the project area. There may be negligible cumulative impacts to ethnographic resources under this alternative.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### **4.3.7 Park Operations**

#### **Methodology**

The assessment of impacts uses the general methodology described above and the resource specific information presented here. For the purposes of analyzing impacts to monument operations from the alternatives, issues evaluated included staffing and budgeting levels and quality and effectiveness of the infrastructure used on the operation of the monument in order to adequately protect and preserve monument resources and provide for a safe and effective visitor experience. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

#### **Intensity of Impact:**

- Negligible:** Park operations would not be adversely or beneficially affected, or the effects would be at low levels of detection and would not have an appreciable effect on monument operations.
- Minor:** The effect would be detectable, but would be of a magnitude that would not have an appreciable effect on monument operations.
- Moderate:** The effects would be readily apparent, likely long- term, and would result in a change in park operations in a manner noticeable to staff and to the public.
- Major:** The effects would be readily apparent, long- term, and would result in a substantial change in monument operations in a manner noticeable to staff and the public and be markedly different from existing operations.

## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. There may be negligible (including direct, indirect, short and long term) impacts to park operations under this alternative, as all activities described under Section 2.1 would continue and there would be no change in park operations or staffing levels from existing conditions. Monument divisions would not experience any appreciable effects on operations or responsibilities.

#### *Cumulative Effects*

Under Alternative A, there may be negligible cumulative impacts to park operations under this alternative when combined with impacts from past, future foreseeable, and ongoing activities described in Chapter 2 and Section 4.1.1. There would be no change in park operations or staffing levels from existing conditions.

#### *Conclusion*

Under Alternative A, there may be negligible (including direct, indirect, short and long term) impacts to park operations and negligible cumulative impacts to park operations. Monument divisions would not experience any appreciable effects on operations or responsibilities under this alternative.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing



legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative B—NPS Preferred Alternative

##### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. There may be development of a parking area adjacent to FR 289 if monitoring indicates high public use in the area. There may be minor to moderate, direct and indirect, short term and long term impacts to park operations from this alternative. These impacts would only be adverse in the instance where budgeting and staffing levels would not be adequate to manage the opened lands. Adverse impacts are not anticipated under this alternative.

It is likely that opening public lands would cause detectable and potentially readily apparent changes within some division operations and responsibilities in both the short term and long term. For example, in the short term, the Visitor and Resource Protection Division, in coordination with the Maintenance Division, would be responsible for marking the designated routes and placing signage along NM 4 and FR 289. This division would also increase the number of daily vehicle and foot patrols of the project area in the short and long term. In the long term, there may be an increase in law enforcement and public safety efforts related to medical emergencies and search and rescue operations, as well as possible conflicts with hunters and off- road vehicle users trespassing onto monument lands from adjacent Forest Service lands. The Interpretative Division would also experience some short and long term, minor to moderate impacts as staff within the Visitor Center would need to provide information to park visitors on the project area lands as well as potentially offer interpretive and educational programs. The Maintenance Division would be responsible for some aspects of route development and maintenance within the interior of the project area, as well as maintenance of the parking areas. The Fire Management Program would continue with activities described under the FMP, but would have to contend with public use in the area. This may cause some detectable changes in timing, operations, and procedures of some fire management activities. The Resources Division would likely coordinate with the Visitor and Resource Protection Division to document and monitor any potential impacts on sensitive cultural and natural resources. However, across all divisions, it is anticipated that current staffing and budgets levels would not increase as a result of implementation of Alternative B.

If the proposed Alamo Boundary Route parking area adjacent to FR 289 were to be constructed, there would likely be some short term increase in staffing and funding

requirements. Contract personnel would likely be hired to complete the work, which may last approximately one to two months. However, these additional resources would be funded through project monies separate from the monument operations budget. Therefore, impacts to park operations in the long term would be minor to moderate from this specific activity.

#### *Cumulative Effects*

Under Alternative B, there may be minor to moderate cumulative impacts to park operations when combined with past, present, and future activities described in Chapter 2 and Section 4.1.1. Most divisions would experience some impacts to daily operations and responsibilities, but not to the extent that would require additional staffing.

#### *Conclusion*

Under Alternative B, there may be minor to moderate, direct and indirect, short and long term impacts to park operations. These impacts are not anticipated to be adverse, as current staffing and budget levels are expected to be sufficient to manage the opened lands. There may be minor to moderate cumulative impacts to park operations when combined with past, present, and future foreseeable activities described in Section 2.1.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative C

#### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. As described in Alternative B, there may be potential minor to moderate, direct and indirect, and short and long term impacts to park operations. Although no routes would be designated under this alternative, most divisions would experience similar impacts to those described above in Alternative B. No adverse impacts are anticipated and staffing and budget levels are expected to be adequate to manage the area.

#### *Cumulative Effects*

Under Alternative C, there may be minor to moderate cumulative impacts as described under Alternative B. Most divisions would experience some impacts to daily operations and responsibilities, but not to the extent that would require additional staffing or increased budgets.

### *Conclusion*

Under Alternative C, there may be minor to moderate, direct and indirect, short and long term impacts to park operations. Although no routes would be designated under this alternative, most divisions would experience similar impacts to those described above in Alternative B. No adverse impacts are anticipated and staffing and budget levels are expected to be adequate. There may be minor to moderate cumulative impacts to park operations as described under Alternative B.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

## **4.3.8 Visitor Use and Experience**

### **Methodology**

The assessment of impacts uses the general methodology described above and the resource specific information presented here. For the purposes of analyzing impacts to visitor use and experience, issues evaluated included access to monument resources by the general public and by visitors with disabilities; the opportunity to experience a minimally affected environment; and the opportunity of the public to understand monument resources and the regional context of the monument. Also analyzed were the opportunity to exercise personal freedom during a monument visit, the provision of traditional employee/visitor experiences, (interpretation through personal services, and access to favorite sites), and the ability to participate in traditional NPS recreational activities (such as hiking or wildlife watching). The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

### **Intensity of Impact:**

**Negligible:** Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor 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, either in the long- term or short- term. The visitor 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 and likely long- term. The visitor would be aware if the effects associated with the alternative and would likely express an opinion about the changes.

**Major:** Changes in visitor use and/or experience would be substantially apparent and have important long- term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

## Impact Analysis

### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. Impacts to visitor use and experience may range from negligible to moderate, adverse, direct and indirect, short and long term. Currently, most visitors to Bandelier are day- trippers from Santa Fe and stay in the monument an average of two to three hours. Frijoles Canyon is the primary visitor use area. Over 98% of monument visitors walk the one- mile Main Trail Loop through Tyuonyi Pueblo and the surrounding cavates. There would likely be negligible adverse impacts to visitors whose main purpose is to visit Frijoles Canyon. Most of these visitors would not likely drive to the project area, if it were open, during a two to three hour day trip to the monument. Most of these visitors to the monument would not be aware of the closed project area and therefore would not likely be aware of the impacts of keeping the project area closed. However, many local residents of Los Alamos and White Rock communities are aware of the project area and the current land management status. During the January, 2005 public scoping meeting for this project, nearly all public comments were in favor of opening the project area to some public use. If Alternative A were implemented and the lands currently closed were to remain closed to public use, there would likely be a moderate adverse direct and indirect, short and long term impact on visitor use and experience. Visitors would not have the ability to participate in traditional National Park Service activities, such as hiking and wildlife watching, within the project area. Visitors would also not have access to the project area and could not exercise personal freedom to visit all of the monument's resources. Those visitors expressing a desire to visit the project area would not be able to do so and would likely express a negative opinion of the continued closure.

#### *Cumulative Effects*

Under Alternative A, there may be negligible cumulative impacts to visitor use and experience are anticipated when combined with past, present, and future foreseeable

actions described in described in Chapter 2 and Section 4.1.1. This is because no visitors would be allowed in the project area and the impacts to visitor use and experience in the project area from ongoing activities as visitors would not likely be aware of those ongoing projects, with the exception of some fire management projects (which are fully analyzed in the Fire Management Plan Environmental Assessment [USDI National Park Service 2005a]).

### *Conclusion*

Under Alternative A, impacts to visitor use and experience may range from negligible to moderate, adverse, direct and indirect, short and long term. Most visitors to Frijoles Canyon would not be aware of the impacts, but community members of Los Alamos, White Rock, and surrounding areas would experience adverse impacts to visitor experience from the continued closure. There may be negligible cumulative impacts from implementation of Alternative A.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. There may be development of a parking area adjacent to FR 289 if monitoring indicates high public use in the area. There may be minor to major, beneficial, direct and indirect, short and long term impacts to visitor use and experience from the implementation of Alternative B. Visitors to the project area would have the opportunity to experience a minimally affected environment as the project area has no development; visitors would also have the ability to participate in traditional National Park Service activities, such as hiking and wildlife viewing. By allowing dispersed recreation, visitors would be able to exercise personal freedom during a monument visit. With the designated of the two hiking routes, visitors would be able to experience traditional employee/visitor experiences, such as interpretation and access to favorite sites (e.g., the summit of Cerro Grande). During the January, 2005 public scoping meetings, the majority of commenters expressed a desire for designated routes in the project area. A route to the summit of Cerro Grande was the most popular recommendation among public respondents. This route would serve to help visitors navigate through the project area to the summit (Figure 4). Additionally, by allowing

dispersed, off- route recreation, visitors would be able to freely experience the project area and determine their own destinations.

The Alamo Boundary Route would provide visitors with a navigable route to the boundary of Bandelier where it meets the Valles Caldera National Preserve (VCNP) (Figure 4). From there visitors may be able to access the VCNP Coyote Call trail. From this trailhead, the Santa Fe National Forest boundary is .25- mile south on FR 289. Visitors could move between the National Forest and Bandelier, and eventually hike to the Coyote Call trail destination, thereby allowing access to Santa Fe National Forest, Bandelier, and the VCNP during a single hike.

The addition of the proposed parking area for the Alamo Boundary Route adjacent to FR 289 would enhance visitor experience by providing a safe, easy- to- find, designated parking area for the Alamo Headwaters area. From this parking area, visitors would be able to utilize the designated route, as well as disperse to other destinations within and out of the monument.

Overall, it is anticipated that visitor use for Bandelier as a whole would increase under Alternative B. It is expected that there would be a spike in visitor use- numbers during the first several years after opening, but those numbers would likely stabilize to levels more consistent with current visitor use statistics (Table 7).

#### *Cumulative Effects*

Under Alternative B, there may be negligible cumulative impacts of past, present, and future foreseeable actions as described in Chapter 2 and Section 4.1.1, to visitor use and experience as described in Alternative A. While visitors would be allowed in the project area, there would be negligible additional impacts to visitor use and experience when combined with such activities as ecological research.

#### *Conclusion*

Under Alternative B, there may be minor to major, beneficial, direct and indirect, short and long term impacts to visitor use and experience. Visitor experience within Bandelier would be enhanced by allowing public access to currently closed lands. There may be negligible cumulative impacts under this alternative when combined with past, present, and future foreseeable actions.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

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## Alternative C

### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289. Impacts under this alternative would be similar to those described under Alternative B, minor to major, beneficial, direct and indirect, short and long term. The beneficial impacts of designated routes to the summit of Cerro Grande and the Alamo boundary with VCNP would not be realized under this alternative. However, there still would be opportunities for dispersed recreation throughout the project area. Visitors would still be able to access these destination points, but would do so without the use of designated routes. Visitors would have the opportunity to exercise personal freedom to enjoy the monument's resources and to participate in traditional National Park Service activities such as hiking and wildlife viewing. Visitors would be able to experience a minimally affected environment that would likely enhance their national park experience.

As described in Alternative B, it is anticipated that visitor use for Bandelier as a whole would increase under this alternative. It is expected that there would be a spike in visitor use- numbers during the first several years after opening, but those numbers would likely stabilize to levels more consistent with current visitor use statistics (Table 7).

### *Cumulative Effects*

Under Alternative C, there may be negligible cumulative impacts to visitor use and experience as described for Alternative B.

### *Conclusion*

Under Alternative C, there may be minor to major, beneficial, direct and indirect, short and long term impacts to visitor use and experience. Visitor experience within Bandelier would be enhanced by allowing public access to currently closed lands. There may be negligible cumulative impacts under this alternative when combined with past, present, and future foreseeable actions.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### 4.3.9 Land/Resource Managing Agencies, Tribal Land Management Plans, and Monument Neighbors

#### Methodology

The assessment of impacts uses the general methodology described above and the resource specific information presented here. For the purposes of analyzing impacts to monument neighbors; local, state, and tribal land management plans; and land/resource management agencies, issues evaluated included the effects to private land inholdings within Bandelier's boundary, inholding access and emergency response, changes in recreation uses external to Bandelier, and possible conflicts with federal, state, local, and tribal land use plans, policies, or controls on adjacent lands. The context and duration of impacts, as defined above under *Impact Assessment Methodology*, and the intensity of impacts as defined below, are discussed in the following analysis.

#### Intensity of Impact:

- Negligible:** There is no apparent impact to monument neighbors, and no apparent conflict with local, state, and tribal land management plans or land/resource management agencies.
- Minor:** The impact is slight, but detectable, and will affect a minority of neighbors. A few minor conflicts with local, state, and tribal land management plans or land/resource management agencies may exist, but conflicts are easily resolvable.
- Moderate:** The impact is readily apparent and will affect many neighbors. May significantly conflict with local, state, and tribal land management plans or land/resource management agencies, but conflicts would be resolvable with cooperative efforts.
- Major:** The impact is severely adverse or exceptionally beneficial and will affect the nearly all neighbors. If adverse, the alternative would conflict with local, state, and tribal land management plans or land/resource management agencies and would not be resolvable.

#### Impact Analysis

##### Alternative A—No Action Alternative

#### *Impact Analysis*

Under Alternative A, lands currently closed to the general public would remain closed but all activities described in Section 2.1, *Actions Common to All Alternatives* would continue. There may be negligible impacts to private inholders under this alternative. Current inholders would not be able to access monument lands adjacent to their



property and would still be subject to FR 289 road closures. There would be no impacts to land/resource managing agencies, tribal management plans under this alternative, as existing management status of the area would continue.

#### *Cumulative Effects*

Under Alternative A, there may be negligible cumulative impacts to land/resource managing agencies, tribal management plans, and monument neighbors when combined with past, present, and future foreseeable activities in the project area described in Chapter 2 and Section 4.1.1, specifically fire management activities. Current closure status, when combined fire management activities would add only negligible impacts.

#### *Conclusion*

Under Alternative A, there may be negligible adverse, direct, and indirect, short and long term impacts to private lands held within monument boundaries. There would be no impacts to land/resource managing agencies or tribal management plans under this alternative. There may be negligible cumulative impacts when combined with activities in the project area such as fire management activities.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

### Alternative B—NPS Preferred Alternative

#### *Impact Analysis*

Under Alternative B, lands currently closed to public access would be open for dispersed year- round day use. Two hiking routes would be designated, the Cerro Grande Route and the Alamo Boundary Route. There may be development of a parking area adjacent to FR 289 if monitoring indicates high public use in the area.

Under this alternative, there may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument neighbors. No conflicts with local, state, federal, or tribal management plans are anticipated. Opening lands in the project area would enhance the visitor experience and would promote visitation of Bandelier and adjacent lands. For instance, visitors could utilize the Alamo Boundary Route to access both U.S. Forest Service lands and the Valles Caldera National Preserve Coyote Call Trail. Bandelier visitors could also utilize the Cerro Grande Route to access Forest Service lands on the Espanola District. However, there may be some negligible to minor adverse, direct, short and long term impacts to the Valles Caldera National Preserve from trespass on to closed lands. Visitor trespass onto the Valles Caldera is anticipated

to be very low, but there is the potential for visitors to access this property from within the project area.

There may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders. These property owners would be able to access Bandelier lands from outside of their property boundaries, which would likely enhance their use of monument lands. However, there may be some negligible to minor adverse impacts to inholders from public use of lands adjacent to their properties. There may be rare occurrences of trespassing onto private lands by visitors who are unaware. There are fences located along property boundaries that would alert visitors to potential trespass, so adverse effects from trespass are anticipated to be negligible.

#### *Cumulative Effects*

Under Alternative B, there may be negligible cumulative impacts from opening lands when combined with activities described in Chapter 2 and Section 4.1.1, including fire management activities. There would likely be few additional, noticeable impacts to inholders and monument neighbors from opening these lands and implementing fire management activities.

#### *Conclusion*

Under Alternative B, there may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders and neighbors. There would be no conflicts with existing local, state, federal, or tribal land management plans. There may be negligible to minor, adverse, direct, short and long term impacts to the Valles Caldera National Preserve and private inholders from the low potential of trespass. There may be negligible cumulative impacts when combined with fire management activities and ecological monitoring in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

#### Alternative C

##### *Impact Analysis*

Under Alternative C, lands currently closed to public access would be open for dispersed year- round day use. There would be no routes designated under this alternative, and no potential developed parking area along FR 289.

Under this alternative, there may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument neighbors. No conflicts with local, state, federal, or tribal management plans are anticipated. Opening lands in the project area would enhance the visitor experience and would promote visitation of Bandelier and adjacent lands. For instance, visitors could utilize the project area to access both U.S. Forest Service lands and the Valles Caldera National Preserve free Coyote Call Trail. However, there may be some negligible to minor adverse, direct, short and long term impacts to the Valles Caldera National Preserve from trespass on to closed lands. Visitor trespass onto the Valles Caldera is anticipated to be very low, but there is the potential for visitors to access this property from within the project area.

There may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders. These property owners would be able to access Bandelier lands from outside of their property boundaries, which would likely enhance their use of monument lands. However, there may be some negligible to minor adverse impacts to inholders from public use of lands adjacent to their properties. There may be rare occurrences of trespassing onto private lands by visitors who are unaware. There are fences located along property boundaries that would alert visitors to potential trespass, so adverse effects from trespass are anticipated to be negligible.

#### *Cumulative Effects*

Under Alternative C, there may be negligible cumulative impacts from opening lands when combined with activities described in Chapter 2 and Section 4.1.1, including fire management activities. There would likely be few additional, noticeable impacts to inholders and monument neighbors from opening these lands and implementing fire management activities.

#### *Conclusion*

Under Alternative C, there may be negligible to minor, beneficial, direct and indirect, short and long term impacts to monument inholders and neighbors. There would be no conflicts with existing local, state, federal, or tribal land management plans. There may be negligible to minor, adverse, direct, short and long term impacts to the Valles Caldera National Preserve and private inholders from the low potential of trespass. There may be negligible cumulative impacts when combined with fire management activities and ecological monitoring in the project area.

Because there would be no major, adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Bandelier National Monument; 2) key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or 3) identified as a goal of the General Management Plan or other relevant NPS documents, there would be no impairment of the monument's resources or values under this alternative.

## Chapter 5

### Consultation and Coordination

#### ***5.0 Introduction***

This chapter details the agencies, tribes, and organizations that were contacted for information and that assisted in identifying important issues, developing alternatives, and analyzing impacts. This chapter also provides a list of preparers and a list of EA recipients.

#### ***5.1 Agencies, Tribes, and Organizations Contacted***

##### Federal Agencies

Bureau of Indian Affairs

Bureau of Land Management

Department of Energy, National Nuclear Security Administration/Los Alamos

National Laboratory

U.S. Fish and Wildlife Service

USDA Forest Service, Española and Jemez Ranger Districts

Valles Caldera Trust

U.S. Senate (Bingaman and Domenici)

U.S. House of Representatives (Udall)

##### State and County Agencies

Governor Bill Richardson, Office of the Governor

New Mexico Department of Game and Fish

New Mexico Environment Department

New Mexico Office of Indian Affairs

New Mexico State Land Office

New Mexico, Department of Cultural Affairs, Historic Preservation Division

Los Alamos County

Rio Arriba County

Sandoval County

Santa Fe County

##### Associated Native American Pueblo Groups

Eight Northern Indian Pueblo Council

Pueblo of Cochiti

Pueblo of San Felipe

Pueblo of San Ildefonso

Pueblo of Santa Clara

Pueblo of Santo Domingo

Pueblo of Zuni  
Pueblo of Jemez

### Organizations

Forest Conservation Council  
Forest Trust  
Friends of Bandelier  
National Audubon - New Mexico  
New Mexico Citizens - Clean Air & Water  
New Mexico Earth First!  
Sierra Club—Pajarito Group  
Sierra Club—Northern New Mexico Group  
Sierra Club—Rio Grande Chapter  
Southwest Headwaters  
The Nature Conservancy  
Wildlands Project

## 5.2 *List of Preparers*

Name and Position*	Project Responsibility	Education	Years of Experience
Darlene Koontz, Superintendent	•Review and oversight	•B.S. Forestry	•24 years
John Mack, Chief of Resource Management	•Review and oversight	•B.S. Biology •M.S. Fish and Wildlife Management	•16 years
Jennifer Carpenter, Resource Management Planner	•Project management •Interagency consultation • Scoping meetings •Primary Author of entire EA •Review •NHPA Section 106 Consultation	•B.S. Ecology •M.S. Applied Ecology and Environmental Resources	•9 years
Brian Jacobs, Vegetation Specialist	•Impact Analysis	•B.S. Systematic Botany •M.S. Population Genetics	•14 years
Steve Fettig, Wildlife Biologist	•Impact Analysis	•M.S.	•10 years

Craig Allen, Senior Research Scientist, U.S. Geological Survey	•Review	•B.S. Cultural Geography M.S. Biogeography Ph.D. Landscape Ecology	•23 years Bandelier NM and USGS Field Research Station at Bandelier
Kay Beeley, Cartographic Technician	•GIS maps and figures	•B.S. Environmental Planning and Management	•19 years
Rory Gauthier, Supervisory Archeologist	• NHPA Section 106 Consultation •Affected Environment •Impact Analysis •Review	•B.A. Archeology	•20 years
Carl Newman, Chief of Protection	•Review •Interagency consultation	B.A. Geography	•28 years
Kelly Shea, Resource Management Program Assistant	•Review •Document Production •Project Assistance	B.A. International Relations & Economics M.S. Environmental Studies	14 years
Lynne Dominy, Chief of Interpretation	•Review	•B.S. Park Management	•16 years

## Chapter 6

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Appendix A  
Public Scoping Letter



## United States Department of the Interior

NATIONAL PARK SERVICE

Bandelier National Monument

HCR 1, Box 1, Suite 15

Los Alamos, New Mexico 87544-9701

L3215(BAND)

January 14, 2005

Dear Interested Party:

The National Park Service (NPS), Bandelier National Monument (Bandelier), is beginning an Environmental Assessment (EA) that will evaluate opening certain lands in the Upper Frijoles and Alamo Canyon watersheds to daytime public recreation. The purpose of this EA is to facilitate informed decision-making regarding what lands should be opened and the appropriate type of public use for those lands within the scope of existing park regulations. Bandelier proposes to open those lands that are closed to recreational use that are located north of State Road 4 and west of Forest Service Road 289, and designate those lands and lands south of State Road 4 as year-round day use only. We are seeking your comments and input on this proposed action. We also welcome your input on any minimal infrastructure needs such as trails, parking, or public facilities.

### **Background:**

Since 1977, Congress has modified the boundaries of Bandelier to include three parcels of land totaling approximately 3,997 acres: 1) the 1977 Cerro Grande/Baca Land Grant - 3,076 acres, 2) the 1999 Elk Meadows addition - 89 acres, and 3) the 2000 Valles Caldera National Preserve/Baca Ranch - 832 acres. These lands were added to protect the Upper Frijoles and Alamo Canyon headwaters, thereby protecting park resources downstream to further Bandelier's overall mission for the preservation of archeological and natural resources. Approximately 2,570 acres are now closed to year-round public use pending environmental compliance and review.

### **Relationship to Existing Park Policy:**

For additional context, other lands within Bandelier currently have the following policies in place to protect park resources: 1) climbing is prohibited; 2) collecting archeological or historic artifacts and disturbing archeological sites are prohibited; 3) pets are restricted to campgrounds, picnic grounds, and parking lots; 4) plant collection and use of bicycles and motor bikes are restricted to paved roads; 5) fires are permitted only in designated campgrounds; and, 6) permits are required for all overnight trips. These same or similar policies would apply to those lands in the Upper Frijoles and Alamo Canyon watersheds.

**Preliminary Issues and Concerns:**

An NPS interdisciplinary team has identified the following preliminary issues and concerns:

- Parking
- Visitor safety
- Archeological and ethnographic concerns
- Protection of sensitive animal and plant habitats
- Adjacent private and public lands
- Barb wire and fencing

**Public Meeting and Comment:**

We would like to hear your comments and concerns regarding this proposal. We invite you to a public scoping open house on Tuesday, January 25, 2005, from 4-7 p.m., at Fuller Lodge in Los Alamos, New Mexico. Bandelier representatives will be available to answer questions, discuss issues, and take comments or concerns. Additionally, written comments will be accepted if postmarked no later than February 25, 2005. Please note that comments, including names and street addresses of respondents, are part of public record, and you may request confidentiality. If you wish to withhold your name or street address from public review, you must state this prominently at the beginning of your written comment. All submissions from organizations or businesses will be made available for public inspection in their entirety.

Mail or email comments to:

Frijoles and Alamo Headwaters Public Access EA  
Bandelier National Monument  
HCR 1, Box 1, Suite 15  
Los Alamos, New Mexico 87544  
[BAND\\_planning@nps.gov](mailto:BAND_planning@nps.gov)

If you have any questions, please contact Jennifer Carpenter, Outdoor Recreation Planner, at 505.672.3861, extension 563.

Sincerely,

Darlene M. Koontz  
Superintendent

