

AN ENVIRONMENTAL ASSESSMENT FOR
THE FIRE MANAGEMENT PLAN
BANDELIER NATIONAL MONUMENT
NEW MEXICO

National Park Service
U.S. Department of the Interior

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PURPOSE OF AND NEED FOR PROPOSED ACTION

The National Park Service (NPS) recognizes the crucial role naturally occurring fire plays in many fire-adapted plant communities (NPS 1988). Most plant communities in Bandelier are fire-adapted and fire-dependent, a fact that has been determined through extensive scientific studies (Allen 1989; Caprio, *et al.* 1988, Swetnam 1990; Touchan and Swetnam 1992). Prior to the 1890s, the mean fire return interval for the upper Frijoles watershed ranged from 2.4 to 22.9 years. The average fire frequency for all sampled areas (ponderosa pine-mixed conifer overstory) is one fire in 10 years during the 18th and 19th centuries (Allen 1989). This fire frequency was severely altered beginning in the latter half of the 19th century as a result of human-induced changes to the landscape, particularly large-scale domestic livestock grazing and routine fire suppression. As a result of Euro-American land management practices such as these, the structure and species composition of these fire-adapted vegetative communities has changed dramatically. An unfortunate consequence of this dynamic has been the high-intensity crownfire. In 1977 the La Mesa fire and the 1996 Dome fire displayed patterns of fire behavior inconsistent with most historical fires of lower intensity within this cover type.

Objectives and Constraints

Management of Bandelier's cultural and natural resources is directed by laws, regulations and policies which mandate preservation of these resources. The Bandelier Resource Management Plan (NPS 1994) further defines specific objectives (See Appendix C for text).

The scope of the proposed action and alternatives is to begin to restore the park's ecosystem processes to levels which existed before the settlement of Euro-Americans in the area. Hence, the goal of fire management at Bandelier is to ultimately support naturally-occurring fires (i.e., prescribed natural fires) in areas where relatively "natural" conditions exist, and in such a manner where adjacent ownerships are not adversely affected. The initial phase for the prescribed natural fire program (PNF) involves much of the Bandelier wilderness (Map, Appendix E). Within this designated area, much of the fuel accumulations (ie, debris) have been reduced from combinations of management-ignited prescribed fire and recent [Dome] wildfire. Therefore, it is anticipated that most declared PNF incidents will be of low to moderate intensity for several years to come.

Action Objectives

Bandelier National Monument has defined four objectives in this proposal that are supported by Federal law, NPS policies and Bandelier's resource management goals and objectives. The actions needed to meet mandates and park objectives are to:

1. Allow prescribed natural fires to function in fire-dependent ecosystems, to the extent possible.
2. Use fire (i.e., management-ignited prescribed fire) to meet specific management objectives.
3. Protect life, property, and park resources from the undesirable effects of fire.
4. Prevent adverse impacts from fire suppression.

Action Constraints

1. Chemical retardants will not be routinely used. However, when authorized by the Superintendent, only fugitive dye-type retardant will be allowed.
2. Dozers are prohibited within the monument.
3. Sensitive areas or species (particularly threatened, endangered or candidate) in the park will be protected.

Primary Decision to be Made

The purpose of this environmental assessment is to explore alternatives towards accomplishment of the stated objectives, within the defined constraints, listed above.

PROPOSED ACTION AND ALTERNATIVES

A. No Action: Continue Current Program of Limited Management-Ignited Prescribed Fires according to the Fire Management Plan approved in 1987

Under a "No Action" alternative, existing conditions and management practices would continue. Approximately 12 to 81 hectares (30-200 ac) would be treated through management ignited prescribed fire each year. The guiding document will continue to be the Bandelier's Fire Management Plan (NPS 1985). However, prescribed natural fires would not be allowed to continue although they are permitted under the 1987 Plan.

All prescribed fires would be ignited under site-specific objectives, prescriptions and mitigating measures identified in individual prescribed burn plans which are approved annually. Fire effects would be monitored through occasional use of downed fuel inventory transects and photo points.

Management activities surrounding the prescribed fire program, including objectives setting, preparation and study would be accomplished through the existing Fire Management Plan. Completion of compliance documents and mitigation is specified in each prescribed burn plan.

B. Expand Management-Ignited Prescribed Fire Program and Implement A Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

Under this alternative, expanded management-ignited prescribed fires (MIPF) would be used as a management tool along with prescribed natural fire to restore and/or maintain fire dependent ecosystems.

Prescribed fires would be conducted according to a Ten-Year Burn Schedule (Appendix A). This schedule is designed to allow for treatment of unnaturally high and potentially hazardous accumulations of fuels and to restore the role of fire within these fire-dependent vegetative communities. The number of hectares to be treated by MIPF will be increased to approximately 300 to 600 hectares (800-1500 ac) annually, depending upon conditions.

Due to the longterm absence of fire as a regulator of stand density in the montane grasslands areas, mechanical tree thinning becomes the management treatment of

choice. These grasslands, which occur at the higher reaches of the Frijoles drainage, were established and maintained through (1) periodic fire; (2) animal grazing activity; (3) southerly exposure; (4) soil drought due to wind blown transfer of winter snows creating xeric conditions favoring grasses; (5) deep "A" horizon soils typical of grasslands; and (6) grassland competition against tree seedling establishment (Allen 1989). Samples from hundreds of tree cores indicate that tree invasion began in the late 1910's and continued through present. These invading trees are largely not affected by prescribed burning on the higher ridges; therefore felling with saws becomes an effective technique to maintain the historically open and widely-spaced character of the tree cover. Selective prescribed burning can then be employed as a followup to consume the downed trees.

All management-ignited prescribed fires will comply with NPS policies and guidelines, and relevant laws and regulations. An annual permit will be requested for all planned ignitions to the State of New Mexico Environmental Improvement Division, Air Quality Bureau in compliance with the Memorandum of Understanding for New Mexico Smoke Management (rev 1997).

All planned prescribed fire units will be subject to a cultural resource clearance pursuant to the National Historic Preservation Act of 1966, and guidelines set forth by the New Mexico State Historic Preservation Officer through the Programmatic Memorandum of Agreement. A qualified archaeologist will survey of the proposed unit, and will identify and document any mitigating actions required. This activity is in accordance with Section 106, National Historic Preservation Act. Criteria applied to determine adverse effect include, but are not limited to: (1) destruction or alteration; (2) isolation from or alteration of the site's surrounding environment; and (3) introduction of noncharacteristic elements. Of particular concern are standing architecture and/or datable wood. Any sites or other features deemed to be in any way potentially adversely affected will be fully mitigated to standards set forth by the archaeologist. Mitigating actions may include, but are not limited to: removal of logs or debris from in or around sites; protection of any sites by isolating them from the fire, or temporarily removing materials under supervision of an archaeologist.

With respect to MIPF within Mexican spotted owl habitat, Bandelier will exclude this activity until such time as a biological opinion is issued by the U.S. Fish and Wildlife Service. The monument will observe guidelines identified in the "Recovery Plan" for spotted owls until further notice.

All constructed firelines will be rehabilitated and all equipment and debris associated with the prescribed fire will be removed within three weeks following each project. The public will be notified of all prescribed fires within one week of a planned ignition date.

Prescribed natural fire (PNF) is proposed as the strategy of choice for natural ignitions over that portion of the Bandelier Wilderness south of the south rim of Frijoles Canyon (see map, Appendix E). "Prescribed Natural Fire (or PNF)" is defined as:

A fire ignited by natural means (usually lightning) which is permitted to burn under specific prescribed conditions, in a preplanned location, and with adequate fire management personnel and equipment available to achieve defined resource management objectives.

All declared PNF's will be carefully monitored and documented. Sources of ignition will also be verified and documented for each.

- Most of the proposed PNF area has been surveyed for cultural resources, particularly much of the area of the 1996 Dome fire. However, should one occur in an as yet unsurveyed location, an archaeologist (also fire certified) will be dispatched immediately to provide on-site reconnaissance of the area. Any objects which could potentially be affected will be protected under established guidelines in the Fire Management Plan. However, it is not anticipated that fuel loadings in the entire zone will reach a level of intensity to be of concern. Approved PNF prescriptions will provide additional constraints on burn intensities. The environmental effects of this management strategy will also be monitored according to strict guidelines and standards outlined in the Fire Monitoring Handbook (NPS 1992).

The unmitigatable impacts of the proposed action are: decreased visibility and increased levels of particulates that will occur on a short-term basis from management-ignited prescribed fires; some areas will be blackened for short periods (i.e., a season); some tree trunks will be blackened by char and foliage will be browned by scorching; some animals will be injured or killed as a result of fire and tree mortality; and visitor access will be restricted for short periods from burn areas during actual ignitions. For PNF, visibility may be impaired over portions of the Bandelier wilderness by varying levels of smoke. However, impacts will be intermittent. Otherwise, impacts from MIPF discussed above would likewise apply to PNF activity.

C. Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

Under this alternative, woody surface debris (i.e., logs, branches, etc) would be manually removed from areas where high wood concentrations exist, thus reducing the potential for high intensity wildfires.

Much of the work required in the piñon-juniper woodland is within designated wilderness, subject to severe minimum-tool constraints. Vehicular access to project areas would be non-existent or extremely limited, via wilderness and backcountry management policies.

AFFECTED ENVIRONMENT

Bandelier 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 (see Figure 1). The area is composed of volcanic ash deposits and lava flows that have been eroded into deep canyons. The park comprises 13,091 hectares (32,727 ac) and extends from the Rio Grande at 1,615m (5,300 ft) to the summit of Cerro Grande at 3,109 m (10,199 ft) on the Jemez Caldera rim. The park's landforms and vegetation have been subjected to a variety of significant human influences, particularly grazing and fire suppression (Allen 1989).

The significance of Bandelier lies in its superb combination of cultural, natural, and wilderness values. To recognize these wilderness values, President Ford signed legislation in October, 1976, creating a 9,423 hectares (23,267 ac) Bandelier Wilderness (P.L. 94-567). Ninety percent of the park is managed as backcountry and more than half of its trails (Frijoles Canyon and Bandelier Backcountry) are part of the National Trail System.

Native Americans have lived in the region for at least the past 10,000 years. The ruins noted in the enabling legislation were occupied by the ancestral Puebloan People between 1100 and 1600 A.D. The full extent of the park's archeological resources is unknown. However, Head (1992) reports that the Bandelier Archeological Survey of 1987-91 inventoried 43 percent of the park, recording 1,959 sites with an overall density of one site per 2.7 hectares (6.8 ac). Such an abundance of archeological sites clearly indicates that, the park contains excellent resources for research into the lifestyle of the ancestral Puebloan People.

Figure 1 - Vicinity Map



The major vegetation communities encountered in the elevations between the Rio Grande and the eastern rim of the Valles Caldera may be summarized as follows:

- juniper (Juniperus monosperma) grasslands from about 1600-1900 m (5,249-6,234 ft);
- piñon-juniper (Pinus edulis) woodlands at 1900-2100 m (6,234-6,889 ft);
- ponderosa pine (Pinus ponderosa) forest at 2100-2300 m (6,889-7,546 ft);
- mixed conifer forest consisting of ponderosa pine, Douglas-fir (Pseudotsuga menziesii), white fir (Abies concolor), aspen (Populus tremuloides), and limber pine (Pinus flexilis) at 2300-2900 m (7,546-9,514 ft);
- spruce-fir forest of Engelmann spruce (Picea engelmannii) and corkbark fir (Abies lasiocarpa var. arizonica) on the north slopes of the highest peaks above 2900 m (9,514 ft).

High elevation grasslands (Festuca thurberi, Danthonia parryi) occur as large breaks in mixed conifer forests on upper south-facing slopes, and large moist meadows occupy the caldera basins. The vascular plant flora of Bandelier National Monument includes collections of 720 species in 347 genera representing 86 families. Rare and endangered plant species found locally include the yellow ladyslipper (Cypripedium calceolus), rattlesnake fern (Botrychium virginianum) and grammagrass cactus (Pediocactus papyracanthus).

The monument is bordered to the south, west and northeast by the Santa Fe National Forest; to the north by a private 36,00 hectares (90,000 ac) ranch (Baca Land and Cattle Company; also a registered National Natural Landmark known as "Valles Caldera"); and to the east by Department of Energy (Los Alamos National Laboratory) lands (see Fig. 1). The park is a member of the Joint Powers Operating Plan, Santa Fe Zone. This interagency cooperative plan provides for mutual aid initial attack of wildfires using the concept of closest available resources.

The communities of Los Alamos and White Rock are about five air miles to the east and southeast, respectively, from the park. The population of these two areas exceeds 17,000. These communities are composed of a high proportion of well-educated individuals who are employed by the Los Alamos National Laboratory. Consequently, the economies of the two towns are almost entirely dependent on the Laboratory.

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ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

Environmental issues associated with the proposed action and/or the other alternatives are marked in the table below.

CRITICAL ELEMENTS	AFFECTED	
	Yes	No
Cultural Resources	X	
Air Quality & Related Values	X	
Water Quality & Soils	X	
Threatened/Endangered Species	X	
Other Plants & Animals	X	
Wetlands/Riparian Zones & Floodplains	X	
Wilderness and Scenic Values	X	

Impacts to Cultural Resources

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Under the limited prescribed burn alternative, mitigation and compliance measures to protect all cultural resources will remain. However, with the potential of increased suppression actions the adverse impacts to these resources would likely increase. Impacts may include damage or displacement of cultural materials, resulting from fireline construction and mop up activities, as well as direct effects of heat on materials in some cases.

Resource advisors assigned to the suppression organization would be required to provide guidance in mitigation measures and ensure that the constraints listed by the Superintendent are being followed by the incident commander and staff.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

All surface and some subsurface organic artifacts are at risk, to some degree, under all the alternatives. Fire has been influencing the Bandelier landscape and will continue to influence the landscape and associated cultural resources. As described above, some archaeological sites have been damaged by very high intensity wildfire (most recently the Dome fire 1996), but many more have been adversely affected by fire suppression operations and equipment.

Prescribed burning and limited mechanical removal of trees are conducted so that impacts to cultural resources are minimized. In fact, prescribed burning can, in some instances, actually enhance the value of the park's cultural resources. Existing sites are often revealed when fuels and vegetation are reduced. By the same token, however, exposed sites may become vulnerable to unauthorized collection or vandalism, although there is no evidence to date that supports this.

For Prescribed Natural Fires, a cultural clearance shall be part of the PNF Burnplan. The [PNF] Burnplan (formerly termed the Fire Situation Analysis) is the decision document for each PNF, and is updated daily during the incident. Cultural resources will be considered in any decision relating to ignitions being managed as a PNF. A qualified archaeologist will be involved with identifying any vulnerable sites in the area of the fire through site records and/or field reconnaissance. A cultural clearance will be completed prior to the signing of the

employed as directed by the resource advisor.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

Fuel reduction in these areas by mechanical means would generally be beneficial for cultural resources. Removal of logs and heavy woody debris would reduce potential for heat impacts resulting from fire within cultural sites. However, presence of workers in and around sites can carry a level of impact, particularly dragging large logs off of sites and breaking surface artifacts.

Impacts to Air Quality and Related Values

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

By limiting the burn program to small acreage, within a time frame of one or two days, the smoke conditions are fairly accurately predicted and therefore somewhat more manageable. However, the current program would still periodically impair local and regional air quality for the burn's duration.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

Bandelier National Monument is designated a Class I Airshed under provisions contained in the Clean Air Act and Amendments of 1977 and 1990 (P.L. 95-95, 91-Stat. 685; P.L. 95-1090, 91-Stat. 1399; P.L. 101-549, 104-Stat. 2399). Monitoring of fine particulates and visibility has been conducted in the park via particulate samplers and an automated 35mm camera system, which provides visual documentation of air quality and regional haze.

Generally, there will be more particulates emitted through prescribed fire treatment of larger areas under the revised Fire Management Plan. Regio

During a 360 hectare (900 ac) prescribed fire conducted in October 1992, the park received two documented complaints based on air quality impairment. This fire impacted the two local communities, Los Alamos National Laboratory, Santa Fe and several surrounding communities. However, public tolerance for short term visibility impairment resulting from prescribed fires appears high at this time.

Mitigation of smoke impacts consists of selection of prescription variables (i.e., wind direction and speed, atmospheric conditions, and moisture content of fuels) which regulate volume and density of smoke produced. Calculations of emissions, smoke transport and mixing heights are completed for each planned prescribed burn or PNF. Press releases, local agency notifications, signs, and other information is disseminated in a timely manner. Temporary monitoring equipment can be installed for potentially high impact MIPF or PNF activity.

The unmitigable impacts to air quality are decreased visibility during some large prescribed fires and short term increases in particulate levels.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

Air quality related values will not be impacted by activities associated with mechanical reduction of fuels, with the minor exception discussed in the alternative above.

Impacts to Water Quality and Soils

One of the greatest impacts to water quality and soils is the total destruction of vegetative cover resulting from uncontrolled wildfire. The irony is that the very fuel conditions (i.e., dense thickets, heavy loadings of dead & down woody material) which contribute to the extreme intensities often encountered with these fire events were created by the long-term absence of fire. This is evidenced in part from the 1996 Dome fire, where localized slopes in the upper Capulin Canyon watershed were completely burned over from crownfire behavior.

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Although the continued implementation of this alternative would result in similar effects as described in the proposed alternative, the chances of more damaging wildfires is increased.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

The environmental consequence of fire under this alternative would be to accelerate short-term sediment flow (erosion) in certain areas of the park. However, large wildfires such as the 1977 La Mesa fire (White & Wells, 1982; White, 1994) and the 1996 Dome fire (NPS, 1996) acted to destabilize soils and cause [locally] massive, unnatural erosion events.

This alternative would result over time in reducing the potential for this large-scale, severe erosion type event such as found with wildfires. In the long term, the decreasing erosion potential will contribute greatly to stability of cultural sites and associated materials, through enhancement of soil-binding herbaceous ground cover.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

Under this alternative, treated areas may experience some limited additional runoff due to the reduction of foliage interception of rain, particularly during the summer monsoon season (July-August). However, live tree removal would be kept to an absolute minimum. Some minor trenching may encourage erosion channel development on exposed mesas resulting from wood removal operations (dragging). Otherwise, there would be no significant impact.

Impacts to Threatened and Endangered Species

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Under this alternative, it is unlikely that limited burns would result in adverse impacts to species either listed, proposed, or otherwise sensitive within the park. As stated above, the consequence of more suppression of wildfires increases the potential for habitat damage and human-induced harassment of the animal species.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program under revised Fire Management Plan (Proposed Action)

The most significant potential impacts to listed species from large prescribed fires is to the Mexican spotted owl (*Strix occidentalis* var. *mexicanus*). As stated on page one (Objectives and Constraints), Bandelier will defer MIPF in spotted owl habitat until such time as the "no affect" biological opinion is issued by the U.S.

Fish and Wildlife Service. Instead, the parameters listed in the Recovery Plan [for the spotted owl] will be observed.

Peregrine falcon (Falco peregrinus) habitat exists within park boundaries. The primary impacts to this species is human presence, particularly during nesting season. The mitigation of choice is to select the time of year and environmental conditions to prepare and conduct prescribed fires when disturbance is minimal. In accordance with the Peregrine Habitat Management Plan (approved May, 1995) developed by T. Johnson in consultation with park staff, all prescribed fire management activities would be restricted in sensitive zones during critical time frames. Wildfire suppression activities will continue as necessary, but under more restrictive conditions within sensitive zones. Again, proper preplanning of prescribed burns which may include consultation with local experts knowledgeable of the species and habitat is prerequisite to mitigation.

There is no owl habitat located within the proposed PNF area of the park; therefore, mitigating measures are not indicated.

The southwestern willow flycatcher, Empidonax traillii estimus, is now listed as "endangered". However, this species' habitat is unlikely to be affected by wildfires, because the habitat preferred is moist and fuel conditions do not readily maintain fire except under the most extreme cases.

The category 2 (C2) candidates represent another group worthy of mention. These listings are maintained by the U.S. Fish and Wildlife Service as potential for threatened or endangered. These species have no legal protection; however, the protection of habitat for these species would be considered in the planning process for prescribed fire treatments. The two species known to occur in the park and most likely affected by high intensity wildfires are the Jemez Mountains salamander (Plethodon neomexicanus) and the northern goshawk (Accipiter gentilis).

In the case of the salamander, neither MIPF nor PNF would adversely impact the species due to salamander preference for subterranean niches well below any heat penetration. All fire management activities would be restricted in sensitive zones during critical time frames. Fire line would not be constructed through suitable habitat unless deemed absolutely necessary by the Superintendent's Agency Representative with input from the resource advisor during a wildfire situation. In the instance where it is deemed necessary to construct fire line through suitable habitat, natural barriers would be utilized as a first option in delimiting the burn unit; minimal line construction techniques (i.e., removal of duff layer only) would be used as a last resort or as needed to link natural barriers. All fireline would be rehabilitated (i.e., by pulling the duff back onto the line) within one week after the fire is declared out.

Northern goshawk utilizes a wide range of successional forest conditions for foraging and would likely find an increased prey base as a result of fire management activities. As with other sensitive raptor species, all fire management activities would be restricted in sensitive zones during critical time frames.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and the Mixed Conifer

Similar to the alternative above, any planned treatment areas would receive a professional assessment as to possible impacts to resident or transient species. Timing and standards of work could be established so as to minimize or totally avoid species and/or elements of habitat required by listed species.

Impacts to Other Plants and Animals

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Prescribed burning would significantly contribute to restoration and maintenance of naturally functioning ecosystems. This alternative suggests that this restoration and maintenance process be more restrictive, however. The long-term result is increased potential for large, highly destructive crown fires which would alter wildlife habitats and plant communities over large areas. Impacts that cannot be mitigated would include some plant and animal mortality and charred tree trunks.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

The plants and animals native to the park, including sensitive species, evolved with naturally-occurring fires. Loss of the critical role of fire has caused compositional and structural changes in the plant communities and habitat loss for many animals. The ecosystem types most at risk due to the absence of fire are: Cerro Grande savannas, aspen stands, Gambel's oak woodlands, ponderosa pine forests, and pinyon-juniper woodlands.

Fires have both direct and indirect impacts on animals. Some animals, such as the wood rat (*Neotoma* spp.) are directly impacted by fire if their stick nests are consumed. Some snags (dead standing trees) that provide habitat for cavity-nesting species are consumed, while new snags are created. Cover is reduced for some species, particularly rodents, which benefits other species such as raptors. In general, the fires that result in the most habitat damage are those that consume

large volumes of organic material very rapidly. Prescribed fires (both MIPF and PNF) usually burn with varying intensities and rates of spread, leaving unburned islands of vegetation and adequate propagules for rapid soil stabilization. Consequently, species abundance can be impacted for short periods, until numbers recover. The park maintains information on sensitive biota, which is used to avoid unnecessary adverse impacts.

Prescribed fire under this alternative would restore and maintain naturally-functioning ecosystems that support sensitive species. These fires would cover larger areas more quickly and the monitoring program would provide statistically valid data for effective program evaluation. Impacts that cannot be mitigated would include some plant and animal mortality.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

With limited areas being affected, there should be no adverse impacts to other animals' abundance or habitat.

Impacts to Wetlands/Riparian Zones and Floodplains

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Continued implementation of this alternative will likely result in minor impacts associated with longer firelines and more mineral soil exposure. Potential major impacts to riparian system is greater, given the increased likelihood of large, high intensity wildfire events. Runoff would increase, carrying greater sediment loads into the streams and covering streamside vegetation.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

According to White (1981) who reported on geomorphic effects of the 1977 La Mesa Fire, the lower mesas of the park are more susceptible to erosion, and therefore greater sediment runoff than the upper mesas of the Frijoles watershed. Changes from moderate to low sediment yield on the upper mesas is attributable to rapid revegetation on better developed soils coupled with greater amounts of precipitation. Large floods (resulting from the 1977 La Mesa Fire) occurred in lower Frijoles Canyon, the major drainage feature of the park. These floods resulted from widespread severe devegetation from wildfire combined with heavy summer (monsoonal) precipitation. With carefully planned and scheduled

prescribed fire treatments combined with appropriate PNF parameters, the upper canyons and headwaters soils should not be significantly affected.

The Dome fire (1996) burned in a mosaic pattern. Of the total acreage burned, only a small portion burned with moderate or high intensity. Although assessments of effect are early as yet, the (Burned Area Rehabilitation Team) found local areas where the ashes and soils were unstable, which may require several years to recover to an acceptable rate of sedimentation (NPS, 1996). During the summer of 1996, the monsoon period (July - September) brought several major flood events in Capulin Canyon.

Prescribed fires under this proposal would also accelerate the thinning of vegetation and fuels and would remove ladder fuels (i.e., those with vertical continuity) in riparian zones. Very minor, localized sediment movement into streams may originate from pockets of higher burn severity where fuels are concentrated.

Generally, riparian zone vegetative communities (comparatively much wetter normally) are less dependent on periodic fire for maintenance than other park areas. Therefore, they are vulnerable to wildfire for shorter time periods throughout the fire season (late spring and summer months), particularly when fuel conditions are dryer and more flammable.

The potential effects of this proposed action on wet meadows is uncertain. It is possible that hydrologic changes from consumption of large areas of vegetation resulting from wildfire would cause meadows to increase in available moisture due to decreasing evapotranspiration. Some mechanical removal of invading trees followed by lower intensity prescribed fire treatment may be necessary to maintain meadow health and vigor. Vegetative diversity of native plant species will also be encouraged through carefully planned, periodic fire treatments.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

Mechanical reduction under this alternative would impact such a small area that only the most local conditions may be affected. Riparian areas such as streambeds and immediate surroundings would not be a target for mechanical reduction except only in the most isolated cases. As potential flammability would be reduced in these areas, a net positive effect such as reduced erosion potential should be realized.

Impacts to Wilderness and Scenic Values

No Action (Continue Current Program of Limited Management-Ignited Prescribed Fire according to the Fire Management Plan approved in 1987)

Under the current program, the main impacts to wilderness would continue to be noise from limited, pre-authorized use of chainsaws for wildfire suppression and prescribed burn unit preparation. Stumps would be flush-cut to ground level to mitigate visual impacts.

Expand Management-Ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan (Proposed Action)

All of the impacts discussed in the current program would be essentially the same for this proposed action. With expansion of the prescribed fire program, however, chainsaw use (with occasional portable pump use with water only) would increase to some degree. Burn unit preparation in wilderness would involve clearing control lines, removing logs from archaeological sites, and breaking up heavy concentrations (piles) of fuels near control lines.

Prescribed natural fire management may involve very limited saw use to remove heavy logs from in or around cultural sites, or to perform limited control actions to keep the fire within predetermined limits.

Weather monitoring equipment may be established temporarily before, during and after prescribed fires. It will subsequently be removed from the site.

It is estimated that noise intrusion into the wilderness would occur at least twice per year for short time periods (about 2 weeks maximum) for MIPF; and for an estimated 2-10 additional days for PNF.

Scenic (visual) values within and around fire-treated areas would be adversely impacted temporarily, for approximately 1 to 3 growing seasons depending on the site. A wilderness user would likely encounter scorch and char of trees, including standing tree remains (snags). Foliage often discolors to a brown or yellowish appearance until needles drop off. As some users are unaccustomed to seeing some level of blackened and discolored landscape, the appearance can be unpleasant to the eye. However, as the park's public education program emphasizes, these temporary processes are a very healthy and crucial part of a well-functioning ecosystem.

If this alternative is not implemented, opportunities for large and destructive wildfires will increase, completely altering the visual landscape. Large burn areas, such as that resulting from the 6,000-plus hectares (15,000 ac) 1977 La Mesa Fire and some of the 4,500-plus acres of the 1996 Dome fire would remain blackened for at least 15 to 20 years while revegetation naturally occurs. These impacts are not acceptable, nor do they have to occur given management intervention proposed here.

Mechanical Reduction of Hazard Fuels in the Piñon-Juniper Woodland and Mixed Conifer

With severe constraints on the use of any mechanical devices in the wilderness, it is unlikely that this alternative would be deemed feasible by management.

12

13

CONSULTATION AND COORDINATION

This Environmental Assessment been developed under close consultation with the key staff in the Southwest System Support Office of the National Park Service (these persons are identified in the next section).

This Environmental Assessment will be distributed to the following list of Federal, state and local government agencies, as well as interested and concerned private agencies, organizations and individuals. Following a 15-day review period, public comments will be evaluated and a decision document prepared. The decision document will be distributed to those who comment on this Environmental Assessment or who ask to receive a copy.

(Preparer's note: the public review period began on July 10 and end on July 26, 1995 and comments incorporated. Due to unavoidable delays associated with key staff availability in late 1995 and the 1996 severe fire season and park wildfire emergency, followup action on this document resumed in Nov. 1996.)

Distribution List

State Offices

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Governor
Pueblo of Cochiti
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Santa Fe, NM 87543

Friends of Bandelier
Dorothy Hoard, Director
11 Los Arboles Dr.
Los Alamos, NM 87544

Jim Norton
Southwest Regional Director
The Wilderness Society
510 Galisteo St
Santa Fe, NM 87501

Dave Simon
Southwest Regional Director
National Parks and Conservation
Association
823 Gold Ave, S.W.
Albuquerque, NM 87102

Sam Hitt
Forest Guardians
612 Old Santa Fe Trail
Santa Fe, NM 87501

Dave Henderson
Sangre de Cristo Audubon
P.O. Box 9314
Santa Fe, NM 87501

**Individuals Who Have Expressed
Interest:**

Terrell Johnson

Tom Ribe

Roger Stutz

Dorothy Hoard

PREPARER/REVIEWERS

NAME	Association	Contributions
John Lissoway	Fire Management Officer (Retired), Bandelier NM	EA Preparation
Craig Allen	Ecologist, U.S. Geological Survey	Ecological Impacts Review
Brian Jacobs	Resource Management Specialist, Bandelier NM	Document Review
Terrell Johnson	Raptor Consultant	T&E Species Impact Mitigation Advice
Nancy Skinner	Natural Resource Specialist, Southwest SSO	Coordinate Regional EA Review
Charisse Sydoriak	Chief, Resource Management, Bandelier NM	Document Review and Action Advice
Roy Weaver	Superintendent, Bandelier NM	Document Review
Elizabeth Mozzillo	Archeologist, Bandelier NM	Document Review
Stephen Fettig	Wildlife Biologist, Bandelier NM	Document Review

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GLOSSARY

Crownfire: fire behavior characterized by an intermittent or sustained fire front moving through the upper portions of tree canopy, usually followed behind by the surface fire.

Fire Monitoring: the act of observing a fire to obtain information about its environment, behavior, and effects for the purpose of evaluating the fire's objectives and/or prescription.

Fugitive Dye Retardant: a substance which, when applied to fuels (typically aeriially delivered), tends to temporarily retard the flammability of fuels; the dye normally fades completely within several days following application.

Management-Ignited Prescribed Fire: a fire deliberately ignited by land managers within a pre-determined prescription in order to achieve approved resource management objectives.

Prescribed Natural Fire: a fire ignited by natural means (usually lightning) which is permitted to burn under specific environmental conditions, in preplanned locations, with adequate fire management personnel and equipment available to achieve defined objectives.

Prescription: a written statement defining the objectives to be attained; and conditions of temperature, humidity, wind direction and speed, and fuel moisture, under which, if met, a fire will be ignited and/or allowed to burn.

APPENDIX A. Ten-Year Prescribed Fire Schedule

UNIT	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
UF-1					1109F						
UF-5				150F							
UF-7			356F								
UF-8									158S		
UF-9	1227S										1227S
UF-12		1425S									
UF-14	1100F									1100F	
UF-27						270F					
UF-28									200S		
UF-29		650F									
UF-30		500F									
UF-38			700S								
HQ-40										570S	
HQ-41		300S									
HQ-44						76S					300S
HQ-45			420S								
BW-48	300S										
BW-49							340F				
BW-50							320S				
BW-54						850S					
BW-55				1250S							
BW-56								340F			
BW-57								400F			
BW-58									310F		
BW-59									420F		
BW-60	100S										
BW-51				600S							
Totals	2916	2925	1476	2000	1109	1196	660	740	1088	1670	1527

LEGEND

- 1) Burn unit numbers are keyed to the attached maps.
- 2) UF = Upper Frijoles
HQ = Headquarters
BW = Bandelier Wilderness
- 3) S = Spring burn (includes Dec-June months)
F = Fall burn (includes July-Nov months)
- 4) Schedule is subject to change based on unpredictable circumstances.
- 5) Burn unit acreages indicated are approximate.

APPENDIX B. Applicable Laws and Regulations

Federal Laws

Archaeological Resources Protection Act of 1979, as amended
PL 96-95, 93 Stat 721, 16 USC 470a et seq.

Antiquities Act of 1906
PL 59-209, 34 Stat 225, 16 USC 431--433
43 CFR Part 3 -- Preservation of American Antiquities

Bald and Golden Eagle Protection Act
54 Stat 250, 16 USC 668 et seq., originally enacted 1940
PL 86-70, 73 Stat 143 -- June 25, 1959
PL 87-884, 76 Stat 1246 -- October 24, 1962
PL 92-535, 86 Stat 1064 -- October 23, 1972

Bandelier Wilderness -- PL 94-567
Oct. 20, 1976, 90 Stat 2692 -- Bandelier Wilderness established with 23,267 acres.

Clear Air Act and Amendments of 1977 and 1990
PI 95-95, 91 Stat 685
PI 95-1090, 91 Stat 1399
PI 101-549

Endangered Species Act of 1973, as amended
PL 93-205, 87 Stat 384, 16 USC 1531 et seq.
PL 94-325, 90 Stat 724, as amended June 30, 1976
PL 94-359, 90 Stat 911, as amended July 12, 1976
PL 95-212, 91 Stat 1493, as amended December 19, 1977
PL 95-632, 92 Stat 3751, as amended November 10, 1978

Federal Water Pollution Control Act of 1972 (Clean Water Act)
33 USC 1251-1265, 1281-1292, 1311-1328, 1341-1345, 1361-1376; 86 Stat 816, as amended
PL 92-500, 86 Stat 877, 33 USC 1341 et seq.
1987 Federal Water Quality Act

National Historic Preservation Act of 1966, as amended

PL 89-665, 80 Stat 915-919, 16 USC 470 et seq.
PL 91-243, as amended
PL 93-54, as amended
PL 94-422, Title II, as amended -- 1976 (NOTE: this law is part of the Land and Water Conservation Fund Act)
PL 94-458, as amended
PL 96-199, as amended
PL 96-244, as amended
PL 96-515, 94 Stat 2987, as amended December 12, 1980
36 CFR Part 60 -- National Register of Historic Places
36 CFR Part 61 -- Procedures for approved state and local government historic preservation programs
36 CFR Part 63 -- Determinations of eligibility for inclusion in the National Register of Historic Places
36 CFR Part 800 -- Protection of historic and cultural properties
36 CFR Part 800 Appendix A: Guidelines for making "adverse effect" and "no adverse effect" determinations for archaeological resources in accordance with 36 CFR Part 800

National Park Service Authorities Act

PL 94-458; 16 USC 1a et seq.

National Park Service Organic Act of 1916 (NPS Organic Act)

PL Chapter 408, 39 Stat 535 et seq., 16 USC 1
PL 64-235, 16 USC ss1, 2-4, as amended)

The establishing legislation of the National Park Service, known as the Organic Act, charges the Service to "promote and regulate the use of the Federal areas known as...monuments...to conserve the scenery and the natural and historic objects and the wild life therein...in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. 16 USC § 1 (1988)."

National Park System Act of 1976

PL 94-578 Sec. 309 -- 4234 acres of the Cañada de Cochiti Grant and 3076 acres of the headwaters of the Rito de los Frijoles authorized for acquisition and addition to Bandelier National Monument

Wilderness Act of 1964

PL 88-577, 78 Stat 890, 16 USC 1131 et seq.

Executive Orders

E.O. 11593: Protection and Enhancement of the Cultural Environment
36 FR 8921: May 13, 1971
36 CFR Part 60 -- National Register of Historic Places
36 CFR Part 63 -- Determinations of eligibility for inclusion in the National Register of Historic Places
36 CFR Part 800 -- Procedures for the protection of historic and cultural properties

National Park Service Policies

NPS Wildland Fire Management Guideline (NPS-18, 1990) states that:

Any area with vegetation capable of supporting fire will develop a Fire Management Plan.

NPS Management Policies (1988) states that:

Fire-related management objectives will be clearly stated in a fire management plan, which is to be prepared for each park with vegetation capable of burning, to guide a fire management program that is responsive to park needs.

APPENDIX C. Resource Management Goals and Objectives

The following text was taken from the Bandelier National Monument Resource Management Plan (NPS 1995).

Bandelier's overriding resource management goals are to:

- (1) preserve, understand, protect, and manage the cultural and natural resources of the park 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 park's cultural resource management objectives are to:

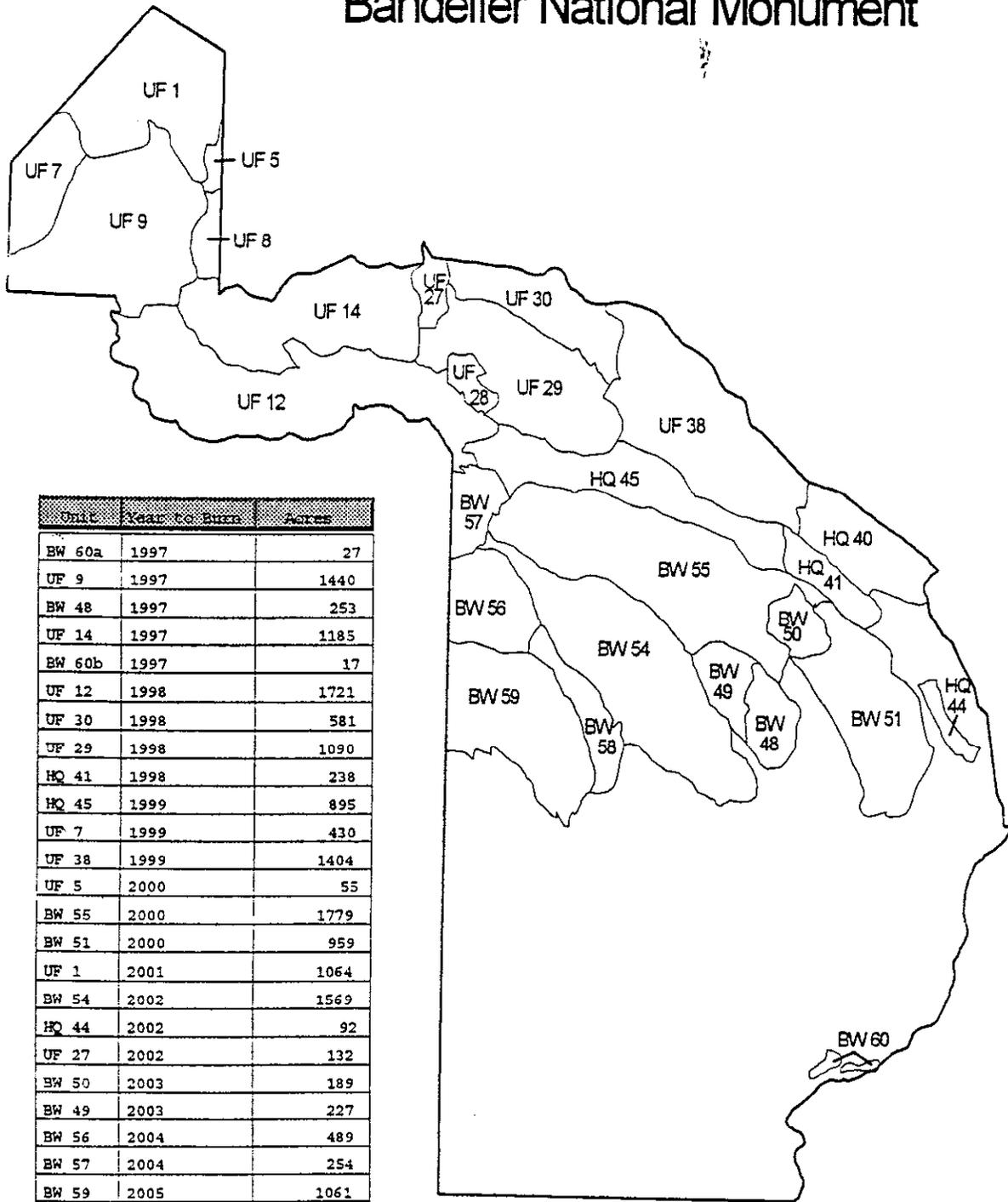
- (1) maintain the historic and prehistoric resources of the park for research and public enjoyment. (Loss of the resource due to natural decay is acceptable, but any loss due to past or present human actions is not acceptable.)
- (2) further understanding of how prehistoric and historic peoples of the Bandelier area interacted with their environment and resource base; and
- (3) maintain an open, consultative relationship with tribal communities that have ancestral ties to the park.

The park's natural resource management objectives are to:

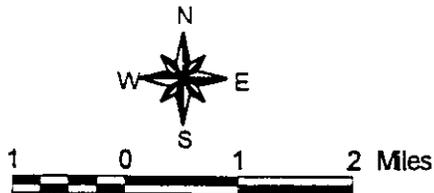
- (1) restore and sustain natural ecosystem conditions and processes unimpaired from human influence, to the degree practicable given landscape and cultural resource constraints;
- (2) carry out a wilderness management program which preserves and restores resource conditions and values defined by law and policy and is compatible with cultural resources management objectives; and
- (3) preserve a comprehensive natural resource base for its value to promote scientific and educational interest.

APPENDIX D. Management Ignited Prescribed Fire Unit Map

Management Ignited Prescribed Fire Units Bandelier National Monument



Unit	Year to Burn	Acres
BW 60a	1997	27
UF 9	1997	1440
BW 48	1997	253
UF 14	1997	1185
BW 60b	1997	17
UF 12	1998	1721
UF 30	1998	581
UF 29	1998	1090
HQ 41	1998	238
HQ 45	1999	895
UF 7	1999	430
UF 38	1999	1404
UF 5	2000	55
BW 55	2000	1779
BW 51	2000	959
UF 1	2001	1064
BW 54	2002	1569
HQ 44	2002	92
UF 27	2002	132
BW 50	2003	189
BW 49	2003	227
BW 56	2004	489
BW 57	2004	254
BW 59	2005	1061
UF 28	2005	115
UF 8	2005	129
BW 58	2005	302
HQ 40	2006	563





United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542

December 4, 1995

Cons. #2-22-95-I-532

RECEIVED
DEC 5 1995
BANDOLIER NM

Roy Weaver, Superintendent
National Park Service
Bandelier National Monument
HCR 1, Box 1, Suite 15
Los Alamos, New Mexico 87544-9701

Dear Mr. Weaver:

This is in response to your September 15, 1995, letter requesting our concurrence with the determination that implementation of Bandelier National Monument's Fire Management program may affect, but is not likely to adversely affect proposed, threatened, or endangered species. These species include the threatened Mexican spotted owl (*Strix occidentalis lucida*) (owl) and bald eagle (*Haliaeetus leucocephalus*), and the endangered southwestern willow flycatcher (*Empidonax trailii extimus*) and peregrine falcon (*Falco peregrinus anatum*). No federally proposed species occur within Bandelier National Monument. The U.S. Fish and Wildlife Service (Service) offers the following comments on the Biological Assessment (BA) for the implementation of the Fire Management Plan for Bandelier National Monument.

After reviewing the Biological Assessment for the implementation of the Fire Management Plan, we would first like commend Bandelier National Monument for the caliber of data that went into the report. We applaud your efforts to produce an implementation plan based on the best scientific data available. We support the use of fire as a tool to restore ecosystem processes and re-establish more natural fire regimes. The Service also supports the use of prescribed natural fire to thin overstocked dense stands of immature conifers, to lessen the possibility of future catastrophic fires, and to help manage habitat for specific plant and wildlife species adapted to natural fire and subsequent habitat succession. The Service agrees that lower intensity prescribed natural fire may have some short-term negative effects to owl habitat but much less than a large catastrophic fire that would severely impact habitat conditions. During a October 19, 1995, conference call between Steve Fettig and John Lissoway of your staff and Carol Torrez and David Leal of this office, it was mentioned that monitoring small mammal populations was a possibility. The Service encourages monitoring efforts since little is known about fire and how it affects the owl's prey base.

The Service concurs with your determination that implementation of Bandelier National Monument's Fire Management program may affect, but is not likely to adversely affect

Terrell H. Johnson
PO Box 327
Los Alamos, NM 87544

September 5, 1995

Mr. Roy Weaver, Superintendent
Bandelier National Monument
HCR 1, Box 1, Suite 15
Los Alamos, NM 87544-9701

RECEIVED
SEP - 8 1995
BANDELIER NM

Dear Roy:

Thank you for sending the environmental assessment for the draft Fire Management Plan. I fully support the movement toward a prescribed natural fire program. The description of measures to protect spotted owls and their habitats during prescribed burns seems complete, but more should be said about prescribed natural fires.

The statement (p. 17) that no owl habitat is within the proposed PNF area of the park is incorrect. Suitable nesting and roosting habitat are located within both the conditional and unconditional PNF zones outlined in Appendix E. However, I believe that prescribed natural fires should be allowed to burn within suitable spotted owl nesting and roosting habitat, even during the breeding season. Spotted owls evolved with natural fire, and are likely to be largely unaffected by it for the following reasons:

- 1) Most lightning ignitions will occur on the mesas, not in the canyons where spotted owls nest and roost.
- 2) Prescribed natural fires would not be allowed unless fuel loading and weather conditions would produce low fire intensities, especially in the cool, moist areas favored by spotted owls for nesting and roosting.
- 3) Prescribed natural fires are likely to produce the benefits of prescribed burning by maintaining nesting and roosting habitat, insuring against high intensity wildfire, and improving the prey base.
- 4) Spotted owls in Bandelier nest almost exclusively on cliffs, and therefore would have low vulnerability to low intensity fires, except for a short period after young have emerged from the nest.
- 5) Monitoring prescribed natural fires is unlikely to cause disturbance and can easily be managed, compared to setting and controlling prescribed burns, which should be excluded from sensitive areas during the breeding season.

Dorothy and Donald Hoard
11 Los Arboles
Los Alamos, NM 87544

September 2, 1995

Roy Weaver Superintendent
Bandelier National Monument
HCR-1, Box 1, Suite 15
Los Alamos NM 87544

RECEIVED
SEP - 6 1995
BANDELIER NM

Dear Superintendent Weaver:

Thank you for the opportunity to comment on the draft Fire Management Plan.

I support Alternative B, your proposed action.

Here are my comments on the plan:

- *Initial fire schedule.* Under current conditions, a fire produces large areas of dead, but unburned, material. It seems to me that these standing dead forests create a massive fuel load that presents a greater fire hazard than the burn was designed to alleviate. Your fire schedule on page A-1 indicates a six- to eight-year burn schedule. It seems to me that a shorter time period between the first and second burn would be more advantageous in establishing the conditions you wish to create and maintain. I think of the burn in Upper Frijoles along SR 4 as an example of an area that should receive quicker retreatment, if only for safety considerations.
- *Montane grasslands.* This plan does not give a rationale for cutting trees on the grasslands other than attempting to recreate alleged past conditions. (I am aware of the invasion of forest into the grasslands. I presume the ultimate goal is to remove all trees from the area of deep A horizon.) It seems to me the goal should be the healthiest forest/grassland mix under current conditions. My principal concern here is the wisest use of limited resources for ecosystem management.
- *Regulatory involvement.* I feel the current regulatory climate is overly burdensome. It consumes too much of your resources and those of the regulatory agencies. I urge you and your people to identify areas of your management plan that truly require oversight and those that are guided scientifically, then work with the National Park Service and other agencies to achieve regulatory balance. I also urge you to continue your public awareness program for fire management.

I wish you success in your fire management endeavors.

Sincerely,

Dorothy Hoard



FINDING OF NO SIGNIFICANT IMPACT
FOR THE
FIRE MANAGEMENT PLAN

INTRODUCTION

A fire history and other studies (Allen 1989; Caprio et al. 1989; Touchan and Swetnam 1991, 1992) indicate that land use patterns from the 1890's forward, combined with a policy of total fire suppression beginning in the 1910's, amounted to an alteration of ecosystems unparalleled in the human history of this area. These changes in vegetation stand densities created conditions which led to two destructive crownfires affecting the park: the La Mesa Fire of 1977 and the more recent Dome Fire of 1996.

The Bandelier Resource Management Plan (1995) states as one park natural resource management objective to "restore and sustain natural ecosystem conditions and processes unimpaired from human influence, to the degree practicable given landscape and cultural resource constraints". The Environmental Assessment which supports this FONSI describes the following strategies (action objectives) to accomplish the resource objective stated above:

1. To allow prescribed natural fires to function in fire-dependent ecosystems.
2. To use fire to meet management objectives.
3. To protect life, property, and park resources from the effects of unwanted fire.
4. To prevent adverse impacts from fire suppression.

A revised Fire Management Plan (draft, 1996) outlines a total program designed to address these action objectives, consistent with meeting the requirements of the National Environmental Policy Act, other applicable federal laws, and NPS policies.

SUMMARY OF INTERDISCIPLINARY AND ENVIRONMENTAL REVIEW

Public involvement began with the issuance of an Environmental Assessment (EA) for the Fire Management Plan, Bandelier National Monument, New Mexico on August 4, 1995. The draft EA was distributed to known interested groups and individuals, other Federal agencies, media, and public libraries of Los Alamos and White Rock.

The draft EA was on public review from August 4, 1995 to September 4, 1995. The EA analyzed the various impacts of the

alternatives, including a no action alternative. It included the impacts on natural resources, cultural resources, and wilderness and scenic values.

However, due to extenuating circumstances, the review process was delayed. The park became involved in lengthy informal consultations with the U.S. Fish and Wildlife Service on the subject of spotted owl management in relation to prescribed fire. The results of these consultations are summarized in this document; however, the park is still negotiating the change of several requirements imposed by the Recovery Plan for the spotted owl. Therefore, this decision document is viewed as an interim action plan until these differences can be resolved.

The Dome wildfire of 1996 also impacted severely on park staff, resulting in a chain of unavoidable delays in final preparation of this FONSI.

Members of the public who responded to the request for comments on the Environmental Assessment supported the alternative B, which expands the management-ignited prescribed fire program and implements a prescribed natural fire program under the revised Fire Management Plan. Two written comment letters were received from individuals and one letter from another agency (see findings below). Both letters from individuals supported the alternative described above.

The U.S. Fish and Wildlife Service has reviewed the Biological Assessment and EA. By letter dated December 4, 1995, they concluded that implementation of [the PNF portion of] the preferred alternative is supported. However, subject to issuance of a "no affect" biological opinion for the MIPF portion of the preferred alternative, Bandelier will continue to follow the general guidelines of the Recovery Plan for the Mexican spotted owl (USFWS, 1995). These will consist of (1) Monitoring for owl presence within proposed fire treatment units during nesting season; and (2) where owl presence has been confirmed in these units, restricting fire treatments to the non-nesting season.

The aggregated comments from the responses are presented in Appendix 1 to this FONSI along with the NPS response to each comment.

ALTERNATIVES CONSIDERED

A. No Action: The consequences of no action are a continued program of small prescribed burns within the context of the existing Fire Management Plan.

B. Expand Management-Ignited Prescribed Fire Program and Implement A Prescribed Natural Fire Program Under Revised Fire Management Plan: (Preferred Alternative). The expanded program

under this alternative would begin to restore fire's role to a largely fire-dependent ecosystem according to the resource objective stated in the Introduction.

C. Mechanical Reduction of Hazard Fuels in the Pinyon-juniper Woodland and Mixed Conifer: Implementation of this alternative would serve to compliment alternative B, in that management would be afforded this option for situations in which fire treatment is not appropriate. This will be further discussed below under "Decision".

DECISION

The National Park Service selects Alternative B (Expand Management-Ignited Prescribed Fire Program and Implement A Prescribed Natural Fire Program Under Revised Fire Management Plan), and Alternative C (Mechanical Reduction of Hazard Fuels in the Pinyon-juniper Woodland and Mixed Conifer).

Constraints:

1. Monitor all proposed management-ignited prescribed fire units for nesting Mexican spotted owl presence during nesting season; avoid treatment until non-nesting season if presence is confirmed. Continue this procedure until such time as the U.S. Fish & Wildlife Service issues a "no effect" biological opinion for the MIPF portion of the selected alternative.
2. Limit mechanical reduction work to areas where forest structure has been altered or where cultural resources/developed areas may be adversely affected from fire:
 - montane meadows, where in most cases the application of fire has little or no affect on trees invading these grasslands;
 - within altered forest structure, where the application of fire will not meet reduction objectives;
 - within and around cultural sites, where woody removal reduces potential exposure to high levels of heating;
 - in and around park structures and improvements, where exposure to fire may result in damage or loss.

Some of the work required in the pinyon-juniper woodland is within designated wilderness, subject to minimum-tool and vehicle access constraints.

Conclusion

Implementation of Alternatives B and C, expand the management-ignited prescribed fire program, implement a prescribed natural fire program and employ mechanical fuel reduction of hazard fuels in the pinyon-juniper woodland and mixed conifer is expected to result in only positive impacts to the environment.

Any negative environmental impacts that could occur would be minor and temporary in effect. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or historic districts listed in or eligible for listing in the National Register of Historic Places, known ethnographic resources, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection laws.

Based on a review of the *Environmental Assessment for the Fire Management Plan, Bandelier National Monument, New Mexico*, interdisciplinary in-house staff participation, consultation with cooperating and other agencies, and public comments, that implementation of Alternative B and Alternative C does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40CFR 1508.9) an Environmental Impact Statement will not be prepared.

Recommended By:

Superintendent
Bandelier National Monument

Approved By:

Field Director
Intermountain Field Area

APPENDIX A

Topical Summary of Public Concerns and NPS response:

Of the three individuals and organization who submitted written comments, the following represents their input according to topic, and National Park Service response:

1. One respondent stated some concern that "landscape level, extensive (vs. intense) fires probably...[were] much less frequent...than [they are currently]..."

(The reference to possible impacts to Mexican spotted owl (Strix occidentalis lucida) habitat from prescribed natural fires.)

Based on completed fire research by Allen (1989), Touchan & Swetnam (1992, 1995), the number and frequency of watershed-scale fires was much higher in the last century than any time period in this century. More recently, Touchan & Swetnam (1995) and Allen, et al. (1995) document frequent mountain-range-wide fires in the last century prior to human suppression. Mexican spotted owl habitat and prey base have likely been severely altered by the absence of the large, ecologically significant fires. The proposed alternative should have an overall beneficial affect on this species, in part due to the expanded treatment areas and variations in intensities that will occur.

2. The same respondent (as in no. 1 above) recommended leaving some areas untreated (ie, not "...subjected to management-ignited prescribed fires to promote habitat diversity...").

This recommendation is not acceptable since fires are a natural process critical to healthy, sustainable ecosystems. Excluding fire imposes an unnatural condition that reduces habitat diversity and promotes the probability of stand-replacing wildfires. The proposed treatment schedule (MIPF) significantly reduces this risk and reintroduces habitat diversity through creation of plant and animal community mosaics (i.e., treatment areas do not burn uniformly; they leave a "mosaic"). Thus, the goal is to begin applying the (approximate 10-yr. fire return cycle) to all potential habitat.

3. Another comment by this respondent states that "...the effects of prescribed natural fire to the prey base within owl territories should be investigated and monitored."

The National Park Service will continue to monitor and evaluate the impacts of (all) fire management strategies on park ecosystems through an established monitoring program. Components may include fire effects on plant diversity and cover, responses

of certain indicator animal species (as funding permits) such as spotted owl, etc. As additional funds become available, specific investigations, including the impact of fires on the spotted owl prey base will be instituted through in-house and consultant expertise, and resident staff from the Biological Resources Division, U.S. Geological Survey. The (respondent) will be invited to review and participate in the on-going (since 1992 and as funding allows) long-term monitoring of fire effects, particularly as they relate to sensitive species. In any case, the park will comply with guidelines specified in the U.S. Fish and Wildlife Service's Recovery Plan for the spotted owl.

4. One individual respondent commented on shortening the time between first and second (MIPF) treatments.

The National Park Service is very interested in employing this approach; however, as long as there are high priority untreated areas remaining, second entries will be accomplished only as funding and resources will allow. The Bandelier ten-year management-ignited prescribed fire schedule attempts to mimic this return interval to the extent possible.

5. One respondent commented on the issue of cutting trees on montane grasslands, the goal being the creation of the healthiest forest/grassland mix under current conditions to ensure wisest use of limited resources.

The ultimate goal and a high park priority is to ensure that montane grassland communities remain as the predominate vegetative cover on areas such as Cerro Grande. The intent is not clearcutting the invading trees, but to reduce the canopy to a more optimum level and use fire to reduce resulting ground litter which impedes maintenance of healthy herbaceous cover.

6. A respondent commented on achieving regulatory balance and continue the public awareness program for fire management.

With respect to the public awareness program, Bandelier National Monument continues to actively utilize the media along with offsite and onsite interpretive channels to promote public understanding and support for the fire program.

APPENDIX B

REFERENCES CITED

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FINDING OF NO SIGNIFICANT IMPACT
FOR THE
FIRE MANAGEMENT PLAN

Executive Summary

The revised Fire Management Plan, Bandelier National Monument, outlines a total fire program including suppression, expanding management-ignited prescribed and implementing a prescribed natural fire program.

The EA describes three alternatives designed to accomplish the resource objective of restoring and sustaining natural ecosystem conditions and processes, unimpaired from human influence, to the degree practicable given landscape and cultural resource constraints. They are:

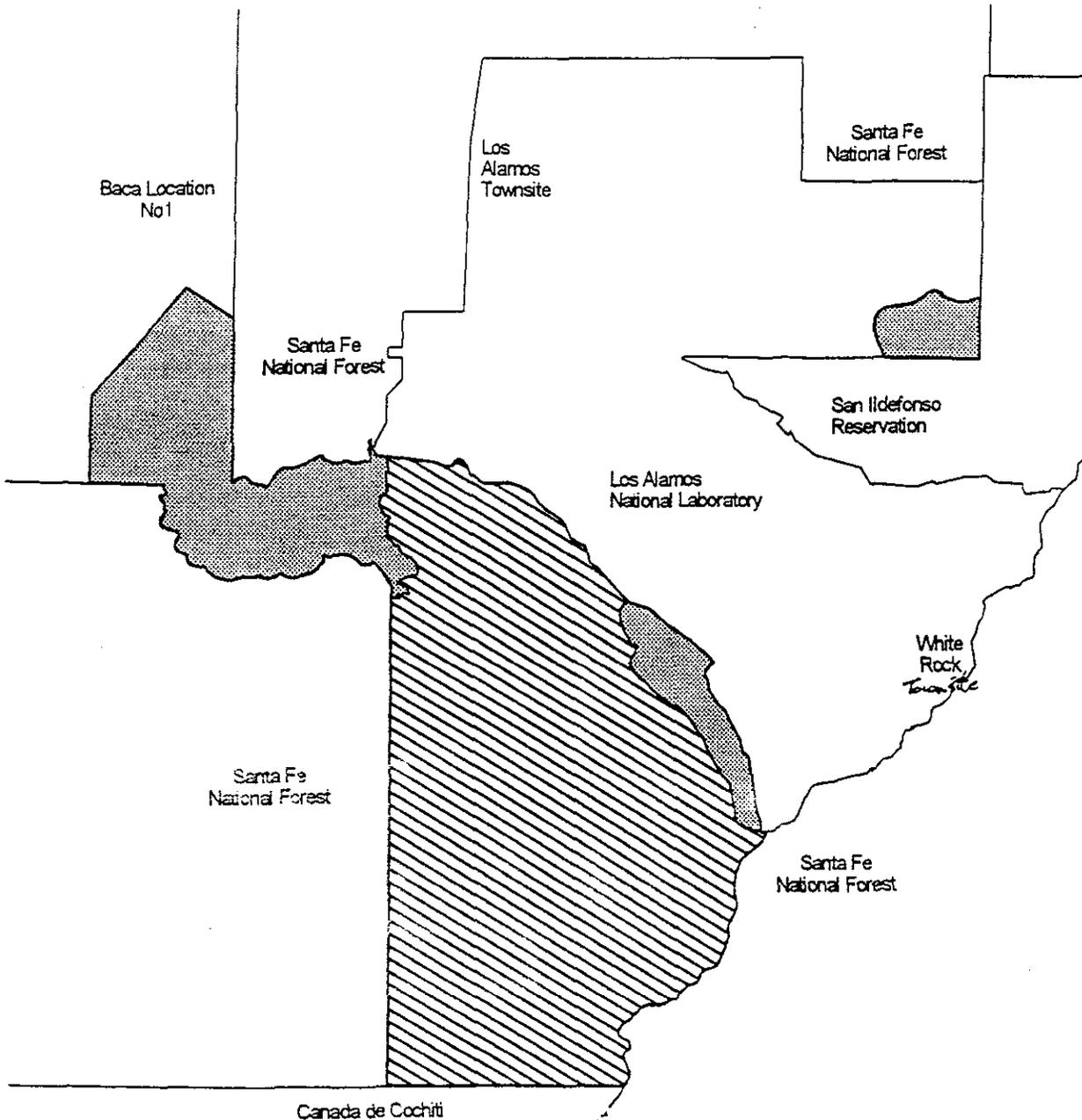
- A. No Action. Continue limited prescribed burns under the existing Fire Management Plan.
- B. Expand Management-ignited Prescribed Fire Program and Implement a Prescribed Natural Fire Program Under Revised Fire Management Plan.
- C. Mechanical Reduction of Hazard Fuels in the Pinyon-juniper Woodland and Mixed Conifer. This alternative would serve to compliment Alternative A, under conditions in which fire use would not be appropriate.

The selected alternatives are Alternative B and Alternative C, given constraints of:

- (1) **Interim action:** monitoring for nesting Mexican spotted owls in proposed burn units; if confirmed, treat with fire during the non-nesting season until USF&WS issues a "no effect" biological opinion for management-ignited prescribed fires;
- (2) limit mechanical fuel reduction to areas altered by human activity and cultural sites/developed areas, in cases where fire is not a prudent management option.

APPENDIX E. Fire Management Zone Map

Fire Management Zones Bandelier National Monument



■ Full Suppression Zone
▨ Prescribed Natural Fire Zone

