

**AN ENVIRONMENTAL ASSESSMENT TO
DECIDE HOW TO ELIMINATE
FERAL CATTLE FROM
BANDELIER NATIONAL MONUMENT**

**National Park Service
U.S. Department of the Interior**

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PURPOSE OF AND NEED FOR PROPOSED ACTION

Feral and other trespass livestock have been an administrative and cultural resource degradation problem at the park since permitted cattle were removed after the assumption of National Park Service (NPS) control in 1932. Allen (1989) also observed that cattle "have been a significant perturbation to natural ecosystems within the current park boundaries since the 1880's." The most serious feral and trespass cattle problem occurs along the Rio Grande and the lower portions of its tributaries, particularly Alamo and Lummis Canyons. These areas have been and continue to be severely degraded by feral and trespass cattle.

Soil and vegetation surveys in the 1970's (Earth Environmental Consultants 1974, 1978; Koehler 1974) found evidence of widespread cattle grazing in the lower canyons as well as on the adjoining mesas. The grazing was considered to be a significant factor in the poor and declining vegetation and soil conditions present throughout the area, particularly on the low benches along the Rio Grande. Observations by park staff in 1990-92 indicate the following on-going adverse impacts: disruption of the riparian zone and wetlands--including overgrazing of herbaceous plants and damage to desirable woody plants, trampling disruption of slopes and stream banks, severe pollution of Alamo Creek and several springs in other canyons from urine and feces, potential reduction of life expectancy for snags and trees preferred by over-wintering bald eagles (Haliaeetus leucocephalus) (a Federally endangered species), destruction of research data from the castings left by the eagles, destruction of sensitive plant and animal habitat, and loss of vegetative cover and soils that protect archeological sites, particularly on the mesas.

Cattle Management History

Despite persistent efforts by park managers to control and eliminate cattle through documentation, owner notification, owner citations, and direct reduction, the cattle have become well established in this area (a summary record of trespass cattle management is located in Appendix A). Cattle trespass in the last decade has been directly related to management of the river level by the Cochiti Dam project. Favorable conditions in 1990 facilitated entry and establishment of many unbranded/untagged cattle onto park lands. During a February meeting with the US Forest Service (USFS) in 1990, the park learned that many of these cattle were considered wild (untagged and unbranded) because permittees on the Caja had previously failed to brand some new calves and they had grown wild. This information prompted the park to declare the trespass cattle as feral and therefore subject to removal. The park issued a public notice in April 1990, of its intent to dispose of the cattle. Potential owners were invited to remove the cattle without penalty prior to the planned disposal action. In May 1990, the park asked

cowboys to round-up the cattle and drive them into a holding pen. Six unsuccessful attempts were made to capture the cattle. Eventually, nine animals were caught by professional cowboys assisted by dogs, although many other animals escaped capture.

Since that time, park staff have monitored the remaining herd which has grown to between 25-30 head. The population appears to be doubling in size every 2-4 years!

On December 15, 1993, two members of management staff and the park superintendent, consulted informally with Gayle Manges (DOI Field Solicitor, Santa Fe) about NPS responsibilities and legal mandates regarding the cattle along the Rio Grande. The park was advised that a mature bull was a health and safety risk (one of the bulls had previously gored a horse carrying a rider and visitor reported being turned back by bulls) and as such should be dispatched as soon as possible. Two mature bulls were shot by a park ranger on December 18 in Alamo Canyon at 1130 hours (time of shooting was important to limit impacts on bald eagle habitat). Another trespassing bull was reported by a visitor at the mouth of Frijoles Canyon on December 20, 1993. This animal was shot by a park ranger on December 21, 1993. All animals were cut open and the carcasses were left in place to be disposed of by wildlife.

New Mexico State Interest

New Mexico State estray law (see Appendix D) dictates that livestock which are unbranded or unclaimed are property of the state. In November 1990, the New Mexico State Livestock Board (NMSLB) was contacted for advice and assistance by the park superintendent. The NMSLB told the park that the Service would have to capture and confine the cows (the NMSLB would not assist in this endeavor) to confirm ownership. The NMSLB said that once the animals were in custody they would become state property and would be sold by auction if ownership was indeterminable. The NPS would be given a nominal fee for feeding the animals during their confinement on park lands, but would not be compensated for capture costs. The NMSLB also told the park that private individuals (cowboys) would not be allowed to keep the cattle they caught even if the NPS issued a "Bill of Sale." The state claimed that the NMSLB is the only agent with the authority to dispose of wild cattle. The Service disagrees and is supported by case law. The park superintendent sent the State Livestock Board Director a letter of intent and request for assistance on January 7, 1991 (see Appendix B). No response from the NMSLB was received by the park.

Legal Mandates

Management of Bandelier National Monument is guided by public laws, rules and regulations, and directives of the Secretary of Interior. According to these mandates, the park must eliminate feral livestock. Legal precedents have also established that Federal mandates supersede state mandates where feral livestock are concerned. A synopsis of relevant mandates and legal precedents follow. A more complete list of supporting laws, regulations, and policies are contained in Appendix C.

National Park Service policy originates in law established by the United States Congress. The following policies, guidelines and plans apply to exotic (feral) animal management within Bandelier:

National Park Service Management Policies, Chapter 4-- Natural Resource Management.

National Park Service Natural Resource Management Guidelines, NPS-77, Chapter 2:283-301.

Bandelier Statement for Management--1991.

Bandelier Cultural and Natural Resource Management Plan (in draft); February 1993.

Congress has stated in the enabling legislation of most units of the National Park System that they have their own particular purposes and objectives. Natural resources in park areas will be managed with a concern for fundamental ecological processes as well as for individual species and features. Interference with natural processes in park natural areas will be allowed only when directed by the Congress or to restore native ecosystem functioning that has been disrupted by human activity.

National Park Service natural resource management policy (NPS-77, 1991) dictates that lands and habitats be managed in a manner to "maintain, rehabilitate, and perpetuate their inherent integrity." "Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken wherever such species threaten park resources or public health and when control is prudent and feasible. High priority will be given to the management of exotic species that have a substantial impact on park resources and that can reasonably be expected to be successfully controlled." Management means that may be used include habitat manipulation and destruction of animals by National Park Service personnel or their authorized agents.

The following Sections briefly describes state and Federal law relating to the management of animals on park lands. The impact of broader laws, such as the Wilderness Act and the Archeological Resource Protection Act are generally discussed in context within this Environmental Assessment.

Relevant National Park Service Statutes

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 U.S.C. § 1 (1988)." It also authorizes the Secretary of the Interior "to provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks.... 16 U.S.C. § 3 (1988).

Relevant Judicial Precedents

Several judicial precedents are relevant to the feral cattle problem in Bandelier. In Hunt v. United States of America, 278 U.S. 96 (1928), the U.S. Supreme Court held that the United States had the power, and the Secretary of Agriculture had the authority, to kill large numbers of deer that were damaging the lands within the Kaibab National Forest and Grand Canyon National Game Preserve in northern Arizona. In rendering its decision, the Court emphasized that "the power of the United States to thus protect its lands and property does not admit of doubt [numerous citations omitted], the game laws or any other statute of the state to the contrary notwithstanding." Id. at 100 (emphasis added).

In New Mexico State Game Comm'n v. Udall, 410 F.2d 1197 (10th Cir.), cert. denied, 396 U.S. 961 (1969), the Tenth Circuit Court held that the Secretary of the Interior had lawful authority under the statutes authorizing the National Park Service (specifically U.S.C. §§ 1 and 3) to destroy deer in Carlsbad Caverns National Park in order to complete a research project in the park. Referring to 16 U.S.C. § 3, the court said, "The obvious purpose of this language is to require the Secretary to determine when it is necessary to destroy animals which, for any reason, may be detrimental to the use of the park. He need not wait until the damage through overbrowsing has taken its toll on the park plant life and deer herd before taking action no less than he would be required to delay the destruction of a vicious animal until after an attack on a person." 410 F.2d at 1201 (emphasis in original). In announcing its decision, the court emphasized that "[i]n protecting the park property it is immaterial that the United States does not have exclusive jurisdiction over the lands within Carlsbad Caverns National Park." Id.

In Kleppe v. New Mexico, 426 U.S. 529 (1976), the U.S. Supreme Court upheld the constitutionality of the Wild Free-Roaming Horses and Burros Act, 16 U.S.C. §§ 1331-1340 (1988), which protects all unbranded and unclaimed horses and burros on public lands of the United States from capture, branding, harassment or death. Although the statute applies to public lands administered by the Bureau of Land Management and the U.S. Forest Service and not to lands administered by the National Park Service, the Kleppe decision is significant in that the Court there held that Congress wields unlimited power to enact statutes for the protection of the public lands and, by extension, other public property. "And while the furthest reaches of the power granted by the Property Clause [of the U.S. Constitution] have not yet been definitively resolved," the Court said, "we have repeatedly observed that '[t]he power over the public land thus entrusted to Congress is without limitations.'" 426 U.S. at 539 (quoting United States v. San Francisco, 310 U.S. 16, 29 (1940)). Thus there can be no question that 16 U.S.C. § 3, authorizing the Secretary of the Interior to destroy "such animals . . . as may be detrimental to the use of any of said parks," is a valid exercise of Congress' power under the Property Clause.

Finally, in Wilkins v. Secretary of the Interior, 995 F.2d 850 (8th Cir. 1993), the Eight Circuit reversed the district court and held that the National Park Service had the authority to remove feral or wild horses from Ozark National Scenic Riverways Park in southern Missouri and that its decision to do so was not arbitrary and capricious. Although the case was presented as a review of an agency action under the Administrative Procedures Act, the court cited 16 U.S.C. § 3 to support its decision. Id. at 853.

The foregoing cases show that (1) the National Park Service's Organic Act is a constitutional exercise of Congress' power under the Property Clause of the U.S. Constitution; (2) the Organic Act authorizes the Secretary of the Interior, in his discretion, to provide for the destruction of animals that are detrimental to the use of a park area; and (3) the Secretary of the Interior may provide for the destruction of animals that are detrimental to the use of a park area even if state law purports to prohibit his action.

Trespass Cattle Removal (36 CFR 2.60)

Trespass cattle removal is covered under the Code of Federal Regulations (36 CFR 2.60). Procedural requirements to remove trespass cattle are specified in the regulations and are, therefore considered by the NPS to be covered as a categorical exclusion. Trespass cattle removal, as described in 36 CFR 2.60, is not the subject of this environmental assessment.

→ impound and remove if owner not found

Objectives and Constraints

Management of Bandelier's cultural and natural resources is directed by laws, regulations, and policies that mandate preservation of those resources. The Bandelier Resource Management Plan further defines specific objectives (see Appendix E for text).

The scope of the proposed action and alternatives is to make a decision about how to address an immediate need. The park Wilderness Management Plan, currently under revision, will also address feral and trespass cattle issues. Public comment will be solicited on the Wilderness Management Plan, as well.

Action Objectives

Bandelier National Monument has defined three 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. Eliminate feral cattle currently in Bandelier National Monument in a manner and at a time that minimizes adverse impacts on cultural and natural resources, particularly T&E species and cultural resources.
2. Protect human health and safety and Federal property.
3. Prevent the establishment of feral cattle on park lands in the future.

Action Constraints

The following constraints apply in all cases except a no action alternative. These constraints are necessary to protect park values and Federally listed or candidate threatened or endangered (T&E) species.

- 1) The current feral animals must be eliminated in February to minimize T&E species impacts. Since many cows are undoubtedly pregnant and should begin giving birth by March, the cattle should be removed no later than the end of February, 1994 to prevent an increase in the number of animals that need to be eliminated.
- 2) Elimination activities must occur between 1000-1400 hours in the wintertime in some areas to mitigate potential impacts to T&E species.

- 3) Frijoles, Lummis, Alamo, and Capulin Canyons may not be used to corral, herd, or trail cattle.
- 4) No animals may be shot or trapped in standing or running water.
- 5) Minimum tool concepts apply to any action since the affected area is in Federally designated Wilderness.
- 6) Visitors shall not be permitted in the area where cattle are being eliminated during elimination periods.
- 7) Care must be taken to avoid or minimize injury to or the capture of native wildlife such as deer and elk.
- 8) Authorization to use mechanized equipment, including rifles, or dogs is not guaranteed. Use of mechanized equipment or pets must be fully justified. Safety concerns, potential for resource damage, and Wilderness impact factors may trigger the administrative use of firearms or dogs. The Regional Director can, on a case by case basis, authorize the restricted use of mechanized equipment in Wilderness. The Superintendent may authorize the use of dogs to assist in the locating and capture of feral animals.

Primary Decision to be Made

The purpose of this environmental assessment is not to determine whether feral or trespass cattle should be eliminated--their elimination is mandated. The purpose of this environmental assessment is to provide information that will allow the National Park Service to make the best possible decision on the following question:

How should the NPS eliminate existing and future feral cattle in Bandelier National Monument?

Issues

The following issues affect the primary decision to be made:

- 1) Proprietary Interest - the U.S. Government and the State of New Mexico claim legal rights that are contradictory where feral cattle are concerned.
- 2) Economic Gain - local cowboys have an economic interest in the cattle and have shown a willingness and limited ability to capture the cattle.

- 3) **Threatened and Endangered Species** - the cattle have had and continue to have an adverse impact on the habitat and potential habitat of four listed species.
- 4) **Wilderness** - the cattle derogate the natural scene and the quality of Wilderness resource values. Capture and removal of the animals would require major disruption of Wilderness values (absence of mechanized equipment, natural quiet, tranquil scenery, and natural conditions and processes). Wilderness users are being exposed to elevated water pollution in some areas.
- 5) **Cultural Resources** - archeological sites protected under the National Historic Preservation Act (NHPA) and the Archeological Resource Protection Act (ARPA) have been and continue to be affected by cattle in the park.
- 6) **Natural Resources** - vegetation, soils, native animals, and water quality have been and continue to be affected by the presence of cattle (qualitative evidence is available in Appendix F).

PROPOSED ACTION AND ALTERNATIVES

A. No Action

Under a "No Action" alternative, existing conditions and management practices would continue. The feral cattle would be allowed to roam on park lands unimpeded unless a particular animal is found to be a health and safety risk to hikers and/or campers. Park staff would continue to document herd size and movement in an ad hoc manner.

B. Capture and Remove

Under a "Capture and Remove" alternative, the cattle would be collected and physically removed from Bandelier in accordance with the Action Constraints listed on page 6 or as deemed necessary by park officials to protect resources or human health and safety. The costs associated with this alternative depend on the compensation methods used. Two methods are described here:

(1) "hire or permit" cowboys to round-up the cattle and compensate them by giving them the cattle; or

(2) contract professional cowboys to round-up and hold the cattle according to NPS contracting procedures.

Since the latest estimate of feral cattle is between 20-30 head, the total cost for a herding capture of the feral cattle is estimated at about \$20,000. The price, of course, could go much higher if a horse or person is injured or killed.

Another capture option would be to "bait" the cattle into one or more holding structures. This option might be much safer than aggressive round-up and herding and resource impacts would be less severe.

Since Frijoles, Lummis, Alamo and Capulin canyon trails cannot be used (see Action Constraint 3 on page 7), the cattle would have to be removed through DOE land, across the Rio Grande to USFS land, or through the Canada de Cochiti (State land). Access to these lands for the purpose of transporting cattle would be at the discretion of the affected land management agency.

Under any method of this alternative, the professional cowboys would have to personally post an insurance bond so that the Federal government and its employees could not be held liable for any injuries, death, or loss of personal

property by any person or agency at any time due the capture, removal, or sale of the feral cattle found in Bandelier.

To prevent future trespass of cattle, the NPS would encourage its adjacent land managers (Department of Energy to the east; USFS to the south and east; and the University of New Mexico (State) to the south and west) to meet their responsibilities to safeguard Bandelier National Monument from trespass cattle.

C. Direct Reduction (Proposed Action)

Under the "Direct Reduction" alternative, the feral cattle would be shot by February 28, 1994 by qualified shooters on the park staff. Direct Reduction guarantees 100 percent successful accomplishment of management objectives within specified constraints.

The feral cattle would be shot at the time and under the circumstances designated by the park superintendent. At a minimum, the Action Constraints listed on page 6 would be met; for example, no cattle would be shot in standing water. Shooters would be directed to shoot animals on slopes rather than in drainage bottoms. The location of each animal killed would be recorded. All cattle would be cut open and the carcasses left in place to be consumed by park wildlife. Once the carcasses have been cleaned, highly visible bones will be moved to mitigate impacts on Wilderness views.

After the cattle have been shot, park rangers would periodically patrol the area. If tagged/branded cattle are found on park property, the park superintendent may impound them, notify the owners, and take action per regulations (36 CFR 2.60). Cattle found to be unbranded and/or unclaimed would be considered feral and eliminated by direct reduction.

Visitor reaction to the viewing or smelling of dead animals would be monitored through casual responses received at the Visitor Center and by routine patrols of affected areas.

To prevent future trespass of cattle, the NPS would encourage its adjacent land managers (Department of Energy to the east; USFS to the south and east; and the University of New Mexico (State) to the south and west) to meet their responsibilities to safeguard Bandelier National Monument from trespass cattle.

D. Alternatives Considered but Dropped from Detailed Analysis

- (1) Fence Cattle out of Bandelier National Monument

Although the State of New Mexico is an "open-range" state, fencing cattle out of Bandelier is the responsibility of the cattle owners. Federal law is supreme; New Mexico State regulations relating to open-range do not apply on Federal lands within New Mexico.

Fencing is not feasible or practical in most areas. Keeping the cattle out once they have been removed would remain problematic since during favorable years the cattle can cross the Rio Grande. Fencing along the Rio Grande is not practical since seasonal flooding and back-up of waters in the Cochiti Reservoir would destroy fences. Cattle would likely continue to wade across the Rio Grande when the river is low or they would come up or down White Rock Canyon into the monument when the fence is buried or destroyed during high waters. It would be a waste of effort and money to continuously replace and maintain fences along the Rio Grande.

(2) National Park Service Managing Utilization of the Meat

The cattle carcasses represent many thousands of pounds of meat which could be consumed by humans. However, Federal law (Food Service Sanitation Manual, US Department of Health and Human Service, Public Health Service, FDA 1976 Regulation) prohibits the consumption of food from unapproved sources. Bandelier National Monument is not an approved source. If the feral cattle were placed in a Federally approved feedlot, inspected, butchered, reinspected, and properly transported, the meat could be consumed by humans. The National Park Service, however, has no capability or mandate to support the processing of cattle by humans.

The Wilderness Act would likely prohibit intrusion of aircraft for the purpose of removing cows for human consumption.

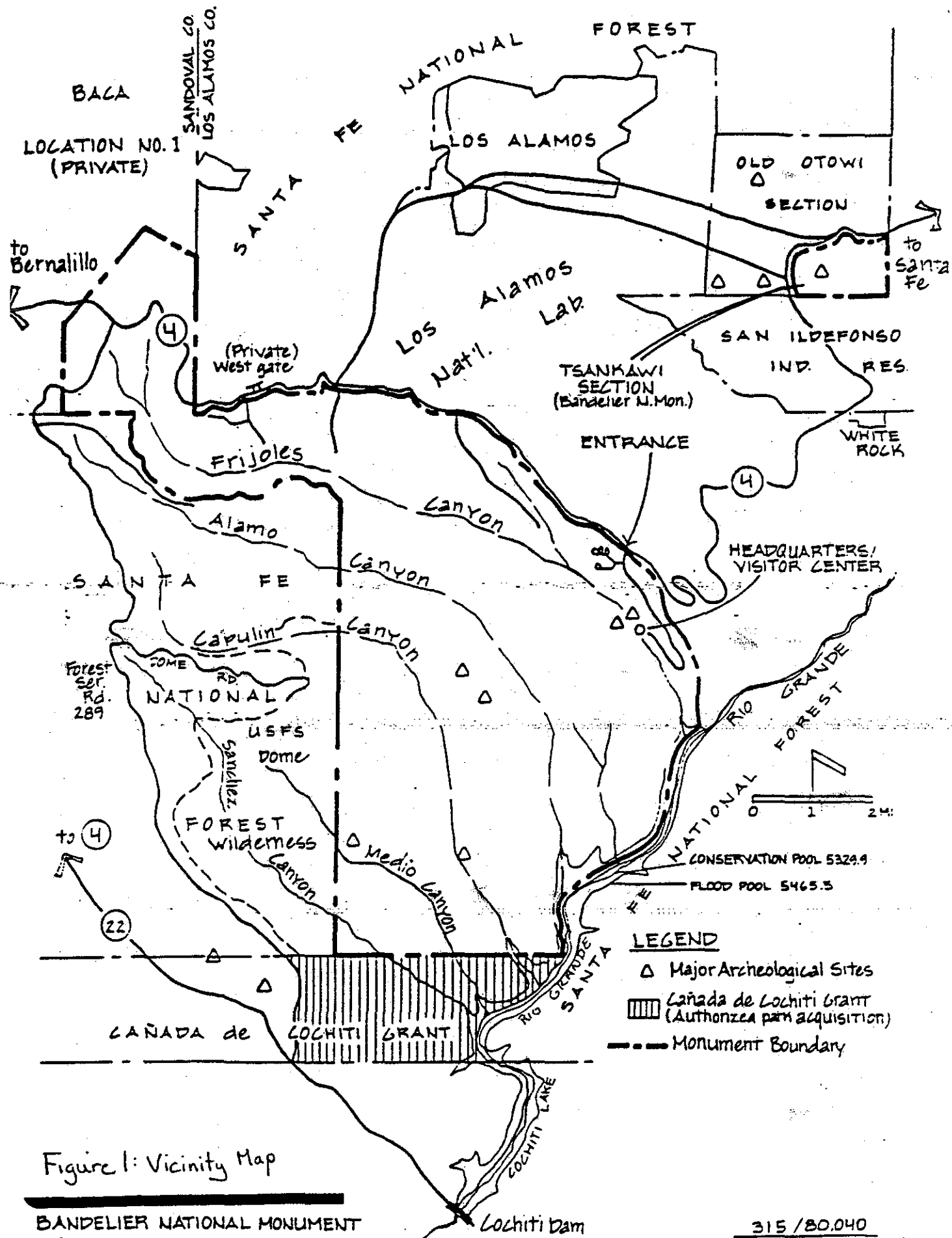
AFFECTED ENVIRONMENT

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 and lava flows that have been eroded into deep canyons. The park comprises 32,727 acres and extends from the Rio Grande at 5,300 ft to the summit of Cerro Grande at 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 the 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. The area occupied by the feral cattle is entirely within designated Wilderness.

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

Bandelier has experienced several boundary changes. Bandelier is bounded to the south by the Rio Grande which has been modified by the Cochiti Reservoir. About 300 acres of the park are periodically inundated by the Reservoir.



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
Air Quality		X
American Indian Religious Uses		X
Cultural/Historical Resources	X	
Farmlands, Prime/Unique lands		X
Floodplain Development		X
Hazardous Materials		X
Health and Safety	X	
Socio-economics	X	
T&E Species	X	
Vegetation and Soils	X	
Water Quality	X	
Wetlands/Riparian Zones	X	
Wild and Scenic Rivers		X
Wilderness	X	
Wildlife	X	

Impacts to Cultural Resources

The feral cattle roam freely through the mouths of Frijoles, Lummis, Alamo, and Capulin canyons destabilizing slopes and creating numerous side-slope paths. The soils in this portion of the monument are extremely susceptible to erosion (from 13 to 21 inches per century (Craig Allen pers. comm. and Environmental Consultants 1977)) largely due to historic grazing. The area has dense concentrations of archeological sites protected under the Antiquities Act, National Historic

Preservation Act, and the Archeological Resource Protection Act. These archeological sites are being directly impacted by trampling and vegetation/soil disturbance, but are also being indirectly impacted by erosion accelerated by the cattle—the sites are literally washing away.

No Action

Under a no action alternative, the feral cattle would increase in number as would archeological site disturbance.

Capture and Remove

Capture and Remove efforts would further degrade the archeological sites and artifacts in the area if the animals are actively herded; specifically, artifacts could be flung out of context, crushed or otherwise damaged, and the disturbance of soil and vegetation would accelerate site erosion. A baiting capture system would be less destructive, but would still cause resource damage particularly in the area(s) where the animals are confined.

Trailing (refer to the glossary) captured animals out of the park would locally destabilize the route the animals follow.

Direct Reduction (Proposed Action)

Some animals shot under the Direct Reduction alternative would undoubtedly get spooked by the shooting and may run across archeological sites further destabilizing these sites. However, a majority of the animals would be shot before adjacent animals were aware of a threat and few animals would run.

Impacts Health and Safety

No Action

Under a No Action Alternative, the threat to humans by a capture or reduction effort would be eliminated (refer to the glossary for a definition of cattle threats to humans). However, the public would continue to be threatened by a growing herd of wild cattle. Threatening animals would have to be shot upon first report. The chances of an unfavorable encounter would remain high and increase as the herd grows and occupies more high visitor use areas, particularly the mouth of Frijoles Canyon. Some visitors have recently reported being "turned back" by feral bulls.

Capture and Remove

Removal of the cattle by cowboys and/or park staff through herding and capture is very hazardous. During a past attempt to capture the animals, one horse was gored and another almost drowned.

A mature bull used to lead the herd. That bull was killed by park staff in December 1993 due to identified health and safety risks. Younger bulls are present in the herd. Horned or unhorned, these wild cattle could gore or charge a horse or person. These animals are extremely wild and are intimately familiar with their habitat which makes their capture extremely difficult. Capturing these animals has been marginally successful in the past, although injuries have been sustained. Further exposure of park staff and visitors to excessively hazardous conditions would open the NPS to unnecessary Tort claims in the event of injury or loss of life or property.

Direct Reduction (Proposed Action)

Under the Direct Reduction alternative, park qualified shooters would shoot the animals during winter when visitation is low. The shooters could pick the time and place within specified constraints to shoot cattle to minimize risks to themselves and the public. This alternative would minimize health and safety risks in the short and long term, since feral cattle could be shot under any circumstances and as soon as the animals are discovered to be feral (limiting visitor exposure).

Impacts to Socio-economics

No Action

A No Action Alternative is unacceptable since leaving cattle in the park would violate the Organic Act (16 U.S.C. § 1), NPS policy and the park's legislative mandate to protect park resources. Despite potential costs, the NPS management objective is to remove existing feral cattle as fast as possible to meet our mandate of conserving park resources.

Capture and Remove

The Capture and Remove Alternative would accomplish management objectives at the least cost to the Service, but not to the Federal Government if challenged in a Court-of-Law. If the NPS were to hire cowboys it would cost about \$20,000 (the contract would require that the cowboys post a damage bond and have liability insurance). Additional costs would be incurred every few years if feral cattle trespass again on park lands. The costs incurred to stabilize impacted resources would be substantial if stabilization actions are funded, but due to budget restrictions, it is highly unlikely that funds would be provided to mitigate the

impacts the cattle have had on park resources or will have during capture and removal attempts. This alternative would not insure 100% success since capture and removal of all cattle cannot be assured.

Direct Reduction (Proposed Action)

The Direct Reduction Alternative would cost an estimated \$500 in salaried time for the proposed immediate reduction and lesser amounts in succeeding years to patrol for and eliminate new feral or trespass cattle. Park staff would be insured under the Federal Tort Claims Act. A professional shooter would cost an estimated \$2,000 to remove current feral cattle. If feral cattle become a problem again in the future, the shooter would have to be contracted for again. The Federal Government cost would increase if this method of elimination were challenged in Court.

Impacts to Threatened and Endangered Species

No Action

These feral cattle are causing continuous adverse impact to the habitat of listed and candidate T&E species (bald eagles, peregrine falcons, southwestern willow flycatcher, cutthroat trout, and possibly the silvery minnow). The cattle trample and consume vegetation, and alter the nutrient balance by polluting the ground and water with their urine and feces. There is evidence that the cows are rubbing themselves on bald eagle roost snags at the mouth of Alamo Canyon--the number of standing snags has decreased in the past year.

Capture and Remove

Attempts to capture and herd the feral animals would further degrade natural resources; specifically, the tearing and pounding action of the animals hooves could kill vegetation, compact or destabilize soils, and knock over woody vegetation, possibly even bald eagle roost trees and riparian trees preferred by the willow flycatcher.

Direct Reduction (Proposed Action)

Under the Direct Reduction alternative, animal carcasses would be left for park wildlife to consume. These carcasses have the potential to become point sources for eagle congregation (and possible targets for poachers). However, according to Terry Johnson (a raptor specialist who works for the State) the bald eagles are usually gone from Bandelier by February. Even if the eagles were present, T. Johnson believes that they would not feed on the dead cattle because these eagles showed little interest in carcasses available to them in 1990. Terry believes that the eagles native foods (primarily fish and duck from the Reservoir) are of

sufficient quality and quantity as to make carrion unattractive. In any case, monitoring/patrol of the areas containing carcasses would be increased to mitigate potential poaching.

Impacts to Vegetation and Soils

One of the greatest impacts to natural resources is the selective browsing of the most desirable woody plants (cottonwood and willows), which supports the establishment and persistence of non-native plants, particularly tamarisk and russian olive. Other adverse impacts on vegetation and soils are also readily observable (see Appendix F).

No Action

Loss of and disruption to vegetation and soils would continue to be a serious problem under the no action alternative. Federal law prohibits the no action alternative since adverse resource impacts would occur.

Capture and Remove

Under the Capture and Remove alternative, vegetation and soils would be more disturbed in the short term since the cattle, horses, and possibly dogs would tear vegetation and destabilize soils during the capture and removal activities. If capture were accomplished through a baiting system, localized denudation and soil disturbance would be severe wherever holding pens are located. Trailing animals out of the park would further destabilize the route selected. These impacts would probably be relatively ephemeral, but in some areas the disturbance caused could start a chain reaction of worsening erosion, vegetation loss, and plant and animal compositional change. However, in the long-term, improvement of natural vegetation and soils is probable in a majority of the areas currently used by feral cattle.

Direct Reduction (Proposed Action)

Some animals shot under the Direct Reduction alternative would undoubtedly get spooked by the shooting and would run across the landscape further destabilizing the vegetation and soils. However, a majority of the animals would be shot before adjacent animals were aware of a threat and few animals would run. Immediate improvements in the composition, vigor, and density of native vegetation is guaranteed. Soil stability would increase dramatically as the vegetation recovers from grazing and trampling pressure.

Impacts to Water Quality

No Action

A no action alternative would severely degrade water quality in localized areas. There are now an estimated 20-30 feral cattle present along the southern boundary of the park, polluting water sources. This area is seasonally open to camping. Increased use in the Spring (during high flow periods) has been observed where rafter/kayakers debark to picnic or camp. It is highly probable that all rafting stop-over points and drinking water sources have been used extensively by feral cattle.

Capture and Remove

The Capture and Remove alternative would have no to little effect on water quality since the conditions under which the actions would occur would prevent further degradation of water sources.

In the long-term water quality would improve for park biota and park visitors, including river runners.

Direct Reduction (Proposed Action)

No adverse impacts would occur under the Direct Reduction alternative because the conditions under which the animals would be shot prevent direct reduction in standing or flowing water. The probability of a flood during the period when fleshy carcasses are on the ground is very low since flood events are most common in July and August.

In the long-term water quality would improve for park biota and park visitors, including river runners.

Impacts to Wetlands/Riparian Zones

No Action

A delta, rich in vegetation and wildlife, has formed along the park's Rio Grande boundary over the last four years. This delta and about 300 acres of the monument used by the cattle are periodically flooded due to management of the Cochiti Reservoir. Since cattle feces and urine continuously flush into the Rio Grande from many grazed areas along the Rio, the effect of Bandelier feral cattle on polluting the environment can be considered negligible. However, the unnatural flow of nutrients (cattle wastes) into the delta and destruction of the riparian zones in park canyons can be reasonably assumed based on research

throughout the West. A no action alternative would magnify current adverse impacts such as vegetation alteration, soil erosion/deposition and nutrient disturbance. These environmental changes would eventually affect native animal occurrence and distribution (including four T&E species).

Capture and Remove

Same impacts as described under vegetation and soils.

Direct Reduction (Proposed Action)

Same impacts as described under vegetation and soils.

Impacts to Wilderness

No Action

These feral animals occupy designated Wilderness protected under the 1964 Wilderness Act. The animals are an illegal and unnatural intrusion that disturb the tranquility and scenic values of the Bandelier Wilderness. A no action decision would cause serious visual and ecological degradation of designated Wilderness.

Capture and Remove

The noise and equipment required in any capture and herding operation would also violate Wilderness values and degrade the landscape.

Use of helicopters in Wilderness areas for any purpose other than for an emergency search and rescue is currently prohibited by regional policy. Flying out live or dead animals would be a serious impact on the tranquility of the Wilderness and could seriously harm the prey species of listed T&E Species occurring in the area.

Direct Reduction (Proposed Action)

Shots from a Direct Reduction action would have a brief and ephemeral impact on Wilderness since rifles would be used. The visual impact of cattle carcasses, and possibly the smell of decomposing carcasses are unavoidable adverse impacts of the Direct Reduction alternative. However, these adverse impacts should last only as long as the carcasses have flesh on them. In the long-term, visitors would occasionally view bones, teeth, and hide.

This alternative guarantees 100 percent elimination of feral cattle which means that Wilderness values will be improved from their present condition over the long-term.

Firearms would be used as the minimum administrative tool deemed necessary to safely and quickly shoot cattle. Although, administratively permitted, rifle shots would temporarily disturb the tranquility of the Wilderness within hearing range.

Impacts to Wildlife

Feral animals compete with native wildlife for nutrients, shelter, and cover (habitat). The Rio Grande feral cattle are competing directly with native ungulates (elk and deer) and indirectly affecting the quality of the habitat and volume of nutrients available to other wildlife, such as rodents, birds, reptiles and amphibians. Feral cattle shape the landscape because they are very large animals; this shaping process is an unnatural process influencing native ecosystems and their wildlife components.

No Action

Some native wildlife and their habitat will continue to be displaced if no action is taken to eliminate the feral cattle.

Capture and Remove

Same impacts as described above under vegetation and soils.

Direct Reduction (Proposed Action)

Same impacts as described above under vegetation and soils.

CONSULTATION AND COORDINATION

The development of this environmental assessment has occurred under close consultation with the key staff in the Southwest Regional 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, and 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.

The public review period will begin on January 14 and end on January 28. T&E species protection constraints have caused the comment period to be short (but within legal mandates). The scope of the proposed action and alternatives is to make a rapid, but well-informed decision to address an immediate need. The feral cattle must be eliminated by February 28, 1994, to prevent adverse threatened and endangered species impacts. The park Wilderness Management Plan, currently under revision, will also address feral and trespass cattle issues. Public comment will also be solicited for the Wilderness Management Plan.

Distribution List

Pueblos

Governing Entities

Governor
Pueblo of Cochiti
P.O. Box 70
Cochiti, NM 87041

Congressional Delegation

Jeff Bingaman, Senator
SH-524 Hart Senate Office Building
Washington, DC 20510

Pete V. Domenici, Senator
SD-434 Dirksen Senate Office
Building
Washington, DC 20510

Bill Richardson, Congressman
332 Cannon House Office Building
Washington, DC 20515

Governor
Pueblo of San Ildefonso
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Santa Fe, NM 87501

Governor
Pueblo of Santo Domingo
P.O. Box 99
Santo Domingo Pueblo, NM 87052

State Offices

Mr. Robert Peters
Deputy Director
State Budget Division
Dept of Finance & Administration
Room 190, Bataan Memorial Bldg
Santa Fe, NM 87503

Mr. John F. Wortman, Jr.
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New Mexico State Livestock Board
7013 Central NE
Albuquerque, NM 87108

State Historic Preservation Office
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Santa Fe, NM 87503

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Ecological Services Branch
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US Forest Service
Santa Fe National Forest
Jemez District
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US Forest Service
Santa Fe National Forest
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224 Cruz Alta Road
Taos, NM 87571

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Mesa Public Library
1742 Central Ave
Los Alamos, NM 87544

Mesa Public Library
White Rock Branch
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White Rock, NM 87544

City of Santa Fe Public Library
Main Office
145 Washinton Ave
Santa Fe, NM 87501

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