



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

**Petroglyph National Monument
New Mexico**

**FINDING OF NO SIGNIFICANT IMPACT
Visitor Use Management Plan /
Environmental Assessment**

Recommended:

2/25/2019

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Superintendent, Petroglyph National Monument

Date

Approved:

3/12/2019

Kate Hammond
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Date

INTRODUCTION

In compliance with the National Environmental Policy Act, the National Park Service (NPS), in coordination with the City of Albuquerque, has prepared a visitor use management plan / environmental assessment for Petroglyph National Monument (monument) to examine various alternatives and environmental impacts associated with management of visitor use within the monument. The monument was established on Albuquerque's West Mesa on June 27, 1990 "to preserve, for the benefit and enjoyment of present and future generations, that area...containing the nationally significant West Mesa escarpment, the Las Imagines National Archeological District, a portion of the Atrisco Land Grant, and other significant natural and cultural resources..." (PL-101-313). The 7,209-acre Monument is jointly owned and managed by the NPS and the City of Albuquerque via a cooperative management agreement between the two entities. Monument resources include more than 20,000 petroglyphs, and over 350 documented archeological sites and ethnographic resources important to many of the pueblos and tribes of the Southwest.

The purpose of the Petroglyph National Monument Visitor Use Management Plan (VUM Plan) / Environmental Assessment (EA) is to clearly formalize a sustainable trail system and manage public use on trails within the monument. The management of the trail network and activities will be compatible with the monument's purpose and significance of the monument and will thus help ensure the protection of many unique cultural and traditional resources, uses, and values. Strategies will address the trail system alignments, management and maintenance of the trail system, access points, associated infrastructure, and provide direction for visitor use management and decision-making. The strategies associated with the trail system provides guidance on resolving differences between visitor groups and impacts to cultural and natural resources. The VUM Plan/EA also includes expectations for long term monitoring and analysis of visitor capacity at the monument.

The VUM Plan/EA is needed because certain areas of the monument experience high levels of visitor use, which degrade natural and archeological resources such as soils and the petroglyphs, respectively. Extensive visitor use has led to trail widening, creation of new routes, littering, vandalism, graffiti, soil erosion, native vegetation loss and invasive species encroachment, and damage to petroglyphs. Given the lack of a formally established trail system, visitors have unrestrained access to the monument.

The statements and conclusions reached in this Finding of No Significant Impact document (FONSI) are based on documentation and analysis provided in the VUM Plan/EA and associated decision file. To the extent necessary, relevant sections of the VUM Plan/EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis in the VUM Plan/EA, the NPS selected Alternative 2 (Preferred Alternative).

The selected action will enhance the protection of the monument's natural and cultural resources by providing a more expansive formalized trail system that links local residents and visitors to areas of interest within the monument and provides additional opportunities to learn

about and understand important monument resources and stories. This alternative focuses visitor use on walking and hiking, with limited multiuse opportunities (bicycling and hiking together), within the monument to provide for connectivity with existing city trails. Horseback riding, which in the past 5 to 10 years has been extremely sparse to nonexistent in the monument, will be prohibited. This alternative will promote resource conservation and tribal access and traditional uses.

The selected alternative includes the following elements:

Visitor Use Management

The visitor use management goals and objectives described in chapter 1 of the VUM Plan/EA will continue to be used to help identify future visitor use management strategies needed to achieve resource protection and visitor experience for the monument. In addition, a comprehensive visitor use management plan will be implemented to maximize opportunities and benefits for visitors while achieving and maintaining goals and objectives for resources and visitor experiences. As part of the plan, the following indicators and thresholds, management strategies, monitoring protocols, and visitor capacities will be implemented to guide visitor use management.

Indicators and Thresholds.

Indicators, thresholds, associated management strategies, and mitigation measures will be implemented because of this planning effort and are described in more detail, in tables 1a-1f, in the VUM Plan/EA. The planning team arrived at the following six indicator topics that would translate the goals and objectives into measurable attributes that can be tracked over time:

- Damage to petroglyphs, archeological sites, and ethnographic resources
- Solitude and natural quiet within Mesa Prieta and the inner canyons of Rinconada and Piedras Marcadas
- Quality of the visitor experience
- Visitor-created trails
- Trail conditions
- Unauthorized resource-related activity

Visitor use management is an iterative process in which management decisions are continuously informed and improved. Indicators are monitored, and adjustments are made as appropriate. As monitoring of conditions continue, managers may decide to modify or add indicators if better methods are found to measure important changes in resource and experiential conditions. Monitoring indicators helps monument staff determine the most effective way to manage visitor use to attain desired visitor experiences and resource conditions.

Public Access Points

Under the selected alternative, the number of public access points in the monument will be reduced from 57 to 30. Five primary access points will continue to exist in the monument at Volcanoes, Boca Negra Canyon, Rinconada Canyon, Piedras Marcadas Canyon, and the Las Imágenes Visitor Center. In addition, one new primary access point will be established at the southernmost tip of the monument near the Mesa Prieta area. Secondary access points will be reduced. There will be 24 secondary access points with a designated trail leading to the monument's formalized trail system. Of the 52 existing secondary access points, 27 will be closed and restored. One existing secondary access point will be designated as a primary access point as mentioned above. The Northern Geologic Window, the Southern Geologic

Window, and Piedras Marcadas Pueblo will be accessible by guided tours or as authorized under special use permit or research permit.

Formalized Trail System

Under the selected alternative, a 39-mile trail system will be formalized and will be comprised of the 8 miles of existing designated trails, 20.5 miles of visitor created trails and former roads that will be converted to designated trails, 9 miles of the administrative roads, and 1.5 miles of the utility access corridors that will be specifically authorized for non-motorized visitor use, all of which are shown in appendix B of the VUM Plan/EA in tables B-2 and B-3. It will include new short connector trails, escarpment crossings, and short reroutes.

Of this total 39-mile formalized trail system:

- Nearly 34.5 miles will be classified as pedestrian use only with leashed pets allowed.
- About 2.5 miles will be classified as pedestrian use only with no pets allowed.
- About 2 miles will be classified as multiuse for pedestrian and bicycle use.

Designated Trails. The 8 miles of designated trails listed in appendix B in table B-1, with consideration of the change in the type of use as described in table B-2 in the VUM Plan/EA, will remain. In addition, approximately 20.5 miles of proposed trails will be designated. Trail width would range from 2 feet to 6 feet in most locations.

Escarpment Crossings. The three existing, designated escarpment trails will be maintained (Mesa Point Trail, Upper Boca Negra Canyon Trail, and the Boca Negra Canyon Multiuse Trail). Other existing visitor-created escarpment crossings will be restored after site-specific analysis. There will also be an additional 10 designated escarpment crossing trails. From north to south of the monument, these include three in Piedras Marcadas Canyon, two between the area south of Paseo del Norte and north of Boca Negra Canyon, three in the Santa Fe Village area, one near the visitor center, and one in the Mesa Prieta area.

Access to the Top of the Volcanoes. Pedestrian access will continue to be authorized to the top of Black Volcano on that designated trail. In addition, access to the top of JA Volcano will be formalized with a designated trail. There will continue to be no authorized access to the top of Vulcan Volcano. There will be no dogs allowed to the tops of Black and JA volcanoes.

Trail Design and Maintenance. The NPS will continue to perform repairs and maintenance on designated trails as necessary using sustainable trail principles. Although a number of visitor-created trails and old roads have been selected for integration into the monument trail system as noted above, no determination has been made about specific improvements needed to ensure trail sustainability. In general, however, the following types of actions will be taken: stabilizing existing trails as needed; implementing minor trail reroutes to improve poor design and mitigate resource concerns; and, employing specialized construction methods (e.g., steps, check dams) to improve stability and durability of the trail and reduce erosion in locations where rerouting is undesirable or impractical.

All new trail construction (including connector trails, escarpment crossings, and reroutes) will be completed using sustainable design principles. Soil and rock material from within the monument or from approved sources outside of the monument will be used as fill in repairing trails and administrative roads.

For the first year or two after stabilization, rerouting, or construction of trails, monument staff will check the trails regularly to identify any new or unforeseen problems and take steps to remedy them. After this initial period, the trails should be fairly stable. Maintenance crews will then transition into a cyclic maintenance program for trail system upkeep.

Administrative Roads. About 9 miles of the existing 27 miles of roads in the monument will be authorized for administrative motorized use and will be maintained and used by NPS law enforcement, facilities management, and resource management staff on an occasional basis. These 9 miles of administrative roads make up about a quarter of the formalized trail system. These roads will generally be up to 20 feet in width.

All 9 miles will be authorized for non-motorized visitor use as follows:

- Pedestrian use (including hiking with dogs on leashes).

About 1 of the 9 miles of primary administrative road will be authorized to non-motorized visitor use as follows:

- Bicycling would continue to be allowed on the north-south road along the western edge of the Northern Geologic Window to maintain access to the Paseo de la Mesa multiuse trail on city land.

Utility Access Corridors - The existing 9 miles of utility access corridors will remain. Four short segments of utility access corridors will become part of the formalized trail system. These include: 1) a short corridor just south of Paseo del Norte (multiuse); a short corridor in Rinconada Canyon (pedestrian use with leashed pets authorized); a short corridor at the southern end of the monument (pedestrian use with leashed pets authorized); and, a short corridor on the Mesa Top above Rinconada Canyon (pedestrian use with leashed pets authorized). Combined, these short corridors equal about 1.5 miles of utility access corridors that will be part of the formalized trail system.

Unauthorized Visitor-Created Trails and Former Roads. There will be about 93.5 miles of unauthorized visitor-created trails and former roads crossing the monument that will not be part of the 39 miles comprising the proposed formalized trail system, primary administrative roads, and utility access corridors. These trails and former roads will be closed and reclaimed and potentially revegetated.

New and Emerging Trail System Uses. New and emerging uses of the monument will be evaluated using the NPS Management Policies 2006, Section 8.1.2 "Process for Determining Appropriate Uses" to determine compatibility with resource protection and visitor experience goals.

Visitor Educational and Interpretive Opportunities

Monument staff will continue to offer various educational and interpretive programs at the Las Imágenes Visitor Center and at other locations within and outside of the monument. There will be opportunities for ranger-led hikes, guided tours, and self-guided discovery. Opportunities for contemplation and solitude, petroglyph viewing, photography, hiking, bird watching, picnicking, walking leashed pets, study of geological and volcanic processes, wildlife viewing, and other activities will be available. In addition to these continued, ongoing activities, adequate and effective directional information and education of visitors will also be implemented.

Accessibility

Guidelines in the Americans with Disabilities Act and the Architectural Barriers Act, which include standards for outdoor developed areas issued by the United States Access Board (US Access Board 2014), will be followed when updating facilities, programs, and services provided by the National Park Service and its partners to the greatest extent feasible.

Partnerships

The National Park Service will continue to work cooperatively with the city's Open Space Division in the administration and management of the monument as directed in the monument's enabling legislation and in accordance with a Cooperative Management Agreement between the city and the National Park Service. The National Park Service will continue to work with the city and other adjacent landowners to maintain and improve on providing a range of trail opportunities and connectivity.

Volunteer Efforts

Volunteers and youth groups will continue to provide a valuable service to the monument by partaking in trail-related work activities, monitoring trail conditions, providing information to visitors, and protecting resources.

RATIONALE

Alternative 2 was selected because it best meets the project's purpose to:

- increase the protection of the monument's unique cultural and natural resources,
- provide a more expansive, sustainable, formalized trail system that links local residents and visitors to areas of interest within the monument, and
- provide visitors enhanced opportunities to learn about important monument resources and stories.

By doing so, this alternative helps ensure that the purpose and significance of Petroglyph National Monument will be maintained.

MITIGATION MEASURES AND MONITORING

Mitigation measures are designed to prevent or minimize adverse impacts or to contain impacts within acceptable limits during and after project implementation. Impact mitigation measures and guidance have been woven into various elements of the selected alternative. The selected alternative will also incorporate the additional guidance and mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION**Public Involvement**

Public involvement concerning the *Petroglyph National Monument Visitor Use Management Plan / Environmental Assessment* took place throughout the planning process. To inform the public of the initial scoping process, a newsletter describing the context for the plan and how to comment was posted to the NPS Planning, Environment, and Public Comment (PEPC) website and made available in hardcopy at the public open house meetings as well as at key locations at the monument and in Albuquerque. This newsletter provided a general overview of the

planning schedule and background on issues anticipated to be addressed in the plan. To ensure that a variety of stakeholders and visitors could participate in this public scoping, the monument elected to accept public comments from September 14, 2016 to October 23, 2016. Upon request for an extension of the comment period, the NPS reopened the public scoping review on November 3, 2016 and closed it again on December 16, 2016, for a total of 82 days.

In addition, public scoping meetings were held at the Taylor Ranch Community Center and at the Rio Grande Nature Center State Park on September 20 and 22 respectively, from 6:00 pm to 8:00 pm. Each meeting had approximately 25 participants. A total of 82 correspondences were received either by direct input into the PEPC website, a completed hardcopy comment form, email, or formal written correspondence. Responses discussed a wide range of topics, from what the allowed visitor use activities should be to how to best protect resources along a new trail system. Of the 82 correspondences received, 74 were from New Mexico, two were from Maryland, and one was received from North Carolina and Virginia, each. Of the commenters from New Mexico, most were from the greater Albuquerque metropolitan area. There were also 4 hardcopy correspondences received at public meetings that did not disclose an address. These commenters were most likely from the Albuquerque metropolitan area. In addition to general public comments, the NPS received comments from official representatives of the City of Albuquerque Open Space Advisory Board.

Members and official representatives of the following organizations submitted scoping comments:

- Albuquerque Mountain Bike Association
- BikeABQ
- Central Group, Sierra Club Rio Grande Chapter
- Central New Mexico Audubon Society
- National Parks Conservation Association
- Piedras Marcadas Neighborhood Association
- Public Employees for Environmental Responsibility
- Santa Fe Fat Tire Society
- Taylor Ranch Neighborhood Association
- The BikeSmith, LLC
- The Courtyards Neighborhood Association
- UNM School of Architecture and Planning/UNM Outdoor Bicycle Shop Employee

The VUM Plan/EA was made available for public review and comment starting November 1, 2018 and ending on November 30, 2018. A request was made by the American Horse Council and New Mexico Horse Council on November 30, 2018 to extend the public comment period. The NPS extended the public comment period to December 14, 2018.

The document for review was posted to the NPS PEPC website and made available in hardcopy at public open house meetings. Posters and flyers about the public meetings were emailed or sent to nearly 2,000 organizations and individuals on the monument's mailing list; and were posted at various locations (i.e. libraries, community centers, coffee shops, etc.) throughout the surrounding area with the dates/locations and information on how to comment on the plan. Paid announcements in local newspapers provided information on the public meetings and instructions on how to review and comment on the plan. Public meetings were held on November 14 and November 15, 2018 at two different locations in Albuquerque, NM. The meetings were held as an open house style, allowing participants to drop in from 6:00 pm to 8:00 pm. The meetings began with a powerpoint presentation by the NPS Superintendent providing an overview of the plan, and time was allowed for people to ask questions or bring up

concerns about the plan. There were about 27 individuals at the November 14th meeting held at the Los Duranes Community Center. On November 15th, about 61 individuals attended the meeting held at the Taylor Ranch Community Center. The concerns raised verbally at the meetings were similar to the concerns expressed in the written letters. Including tribal correspondence, a total of 106 pieces of correspondence were received, with the vast majority (97) being from New Mexico residents. The remaining correspondences were from commenters in Colorado, California, North Carolina, Arizona, Oklahoma, and Washington D.C. Most of the New Mexican correspondences were generally from the greater Albuquerque metropolitan area.

Official comment letters were received from:

- American Horse Council
- Back Country Horsemen of New Mexico
- Central New Mexico Audubon Society
- Corrales Equestrian Advisory Commission
- National Parks Conservation Association
- New Mexico Department of Game and Fish
- New Mexico Horse Council
- Wagon Wheel Ranch
- The Wilderness Society

Members of the following organizations submitted comments:

- Back Country Horsemen
- Back Country Horsemen of New Mexico
- Back Country Horsemen of New Mexico - Pecos Chapter
- New Mexico Horse Council
- Paradise Bluff Homeowners Association
- Taylor Ranch Neighborhood Association

All individual pieces of correspondence were reviewed by the NPS. Substantive public comments about the VUM Plan/EA were identified and are addressed with responses later in this Finding of No Significant Impact document. Any related changes to the VUM Plan/EA are shown in an errata sheet which is also included in Appendix B of this document.

All organizations and individuals on the monument's mailing list will be notified of the approval of the Finding of No Significant Impact.

Agency Consultations

U.S. Fish and Wildlife Service Consultation

In pursuit of fulfilling the intent of section 7(a)(2) of the Endangered Species Act, on January 10, 2018, the NPS accessed the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website to obtain an official species list for endangered and threatened species that may be in the planning area and could be affected by project activities. Five federally threatened and endangered species are on the USFWS list for Bernalillo County in which the monument is located. These five species include: New Mexico meadow jumping mouse (Endangered), Mexican spotted owl (Threatened), Southwestern willow flycatcher (Endangered), Yellow-billed cuckoo (Threatened), and Rio Grande silvery minnow (Endangered). No designated critical habitat is present for any of these species in this county.

The NPS subject matter experts on the planning team reviewed this USFWS list to determine which species could be affected by implementation of the proposed actions described in this

plan. It was determined that alternatives would not affect the five federally listed species because the habitats they depend on are not present in the monument. Informal consultations with USFWS biologists confirmed this. The Rio Grande silvery minnow requires perennial water, which is not present in the monument. The New Mexico meadow jumping mouse is found in two riparian community types: persistent emergent herbaceous wetlands and scrub-shrub wetlands—neither of which occur here. Both the yellow-billed cuckoo and southwestern willow flycatcher depend on dense riparian vegetation habitat, which the monument lacks. The Mexican spotted owl roosts and nests primarily in forested and rocky-canyon habitats often containing mature or old-growth stands with complex structure. These habitat types are not present in the monument. However, the owls forage in a variety of habitats, and there may be some forage opportunities in the monument, such as cliff faces and terraces between cliffs. Discussions with USFWS biologists during informal consultations indicate that the monument does not provide habitat that would support the owl species for a long period of time—habitat that is present is marginal and unlikely to support prolonged use. One record of a Mexican spotted owl was documented in the monument in the spring of 2017, but this individual was a transient and was present for only a short time near the monument's visitor center. No actions are being taken in this plan that will result in the loss of potential owl habitat or result in increased use that will disturb or prevent owls from using the monument. If spotted owls were observed again in the monument, work will stop or be limited to activities that will not disturb the bird or its habitat, and park staff will informally consult with the USFWS on further measures that may need to be taken.

Thus, the selected alternative in the VUM Plan/EA will have no effect on federally listed species.

Native American Consultation

Petroglyph National Monument has 29 traditionally associated pueblos and tribes. The NPS contacted all 29 pueblos and tribes in a letter dated July 13, 2016 to initiate government-to-government consultation in the development of the VUM Plan/EA and invited pueblos and tribes to a September 21, 2016 consultation meeting at the Indian Pueblo Cultural Center in Albuquerque. Twenty-nine tribal officials and members representing 18 pueblos and tribes participated.

On March 21, 2017, a letter was sent to the traditionally associated pueblos and tribes inviting them to a June 14, 2017 government-to-government consultation meeting at the Indian Pueblo Cultural Center in Albuquerque. Seventeen tribal officials and members representing 11 tribes attended; along with representatives from the Office of Senator Tom Udall, the Office of Senator Martin Heinrich, and the Office of Representative Michelle Lujan-Grisham.

On July 25, 2017, a letter was sent to traditionally associated pueblos and tribes inviting them on a 2-day field visit to the monument from August 23-24, 2017. Twenty-two tribal officials and members representing 14 tribes participated.

On March 1, 2018, a letter and copy of the draft VUM Plan/EA was sent to traditionally associated pueblos and tribes inviting them to a roundtable discussion and meeting to discuss the draft VUM Plan/EA on April 26, 2018 at the Indian Pueblo Cultural Center in Albuquerque. Twenty-three tribal officials and members representing 14 tribes, along with a representative from the Office of Senator Tom Udall, participated. Written comments from five pueblos and tribes: White Mountain Apache Tribe, The Hopi Tribe, the Pueblo of Acoma, the Pueblo of Sandia, and Santa Clara Pueblo, were received during the review of the draft VUM Plan/EA.

On November 1, 2018, a letter and copy of the VUM Plan/EA was sent to traditionally associated pueblos and tribes, notifying them of the public review and comment period and public meetings on November 14 and November 15, 2018. Comments on the VUM Plan/EA were received from two tribes: The Hopi Nation and The Comanche Nation. Over the two-year planning effort, a number of one-on-one consultations with pueblos and tribes were conducted; and presentations to the All Pueblo Council of Governors were provided on July 21, 2016 and July 17, 2018. The NPS will continue to consult with the traditionally associated pueblos and tribes as we implement the plan.

New Mexico State Historic Preservation Office Consultation

The New Mexico State Historic Preservation Office was notified of the commencement of the VUM Plan/EA via an in-person meeting on July 27, 2016 and follow-up email on August 17, 2016. A letter initiating the formal section 106 consultation process was sent on April 18, 2017 and an in-person meeting occurred on April 20, 2017 to further discuss the planning effort. Continued communication occurred throughout 2017 and 2018, with a field visit to the monument on May 8, 2018 to discuss aspects of the plan. A letter and hard copy of the VUM Plan/EA was subsequently mailed to the State Historic Preservation Officer on October 31, 2018 requesting concurrence with the NPS determination of No Adverse Effect, considering that site-specific compliance and continued consultation will occur as the NPS implements phases of the plan. The State Historic Preservation Office responded on November 30, 2018, concurring with the NPS determination of No Adverse Effect, with site-specific consultation as phases of the selected action are implemented.

FINDING OF NO SIGNIFICANT IMPACT

CEQ regulations at 40 CFR Section 1508.27 identify ten criteria for determining whether the Selected Action will have a significant effect on the human environment. The NPS reviewed each of these criteria given the environmental impacts described in the EA and determined there will be no significant direct, indirect, or cumulative impacts under any of the criteria.

As described in the EA, the selected alternative has the potential for some adverse effects on ethnographic resources, soils, and visitor use and experience. However, no potential for significant adverse impacts was identified.

As the project relates to ethnographic resources (including cultural landscape), some traditionally associated pueblos and tribes prefer that visitor access to the tops of all volcanoes be prohibited given the potential for disturbance to the ethnographic resources and values associated with these geologic features. Therefore, under the selected alternative, there is potential that these features will continue to be adversely impacted from the perspective of some pueblos and tribes. Other than this potential adverse effect, the various other actions of the selected alternative will result in beneficial effects to ethnographic resources and values (e.g., from the closure of 90+ miles of visitor-created trails and former roads, rehabilitation of several informal access points, sustainable trail design techniques, limited bicycle use, implementation of new management strategies including monitoring, etc.).

The selected alternative will mainly have many beneficial effects on the archeological resources in the monument. The substantial reduction of visitor-created trails (93.5 miles), and the closure, restoration, or rehabilitation of approximately 27 informal access points will provide beneficial, direct impacts to archeological sites in those areas along the escarpment. This restoration will stabilize soils around these sites, and thus mitigate the adverse effects to archeological resources (e.g., from erosion and compaction caused by visitor-created trails).

Enhanced interpretation signage, increased ranger presence, and trail watch volunteers will add an additional measure of site protection. Other resource management actions such as improved documentation and monitoring of petroglyphs and archeological sites will result in long-term, beneficial impacts to archeological resources monument-wide. Collectively, these management strategies and mitigation measures will have a beneficial impact on the physical condition and the integrity of archeological resources.

Trail stabilization and trail construction projects will adversely impact soils along portions of the proposed 39 miles of formalized trails and at access points (where stabilization is needed). However, there will be only small, localized amounts of new disturbance and the effects will be short term, likely lasting no more than one construction season. There is no potential for significant adverse effects to soil in these cases, and revegetation along these disturbance corridors over time will minimize any long-term effect. Furthermore, the effect on soils from the selected alternative will be predominantly beneficial and long-term, as a result from restoration of approximately 93.5 miles of erosive existing routes (which consists of visitor-created trails and former roads not included in the primary administrative roads) and the inclusion of improved erosion control and sustainable trail design/maintenance measures.

In terms of impacts to visitor use and experience in the monument, long-term, adverse impacts will occur to the diversity of visitor experiences, as a more limited range of opportunities will become available under the selected alternative. Specifically, horseback riding will now be prohibited; however, in the past 5 to 10 years, horse use within the monument has been extremely sparse to nonexistent. Monument trail management strategies may include rerouting trails, examining potential temporary closures, and increasing ranger presence/patrol in prioritized high visitor use areas. Should there be an increase in visitor-caused damage to important monument resources and temporary area closures are applied, there will likely be additional, short-term adverse impacts to visitor access and circulation. However, despite these adverse effects, no potential for significant adverse impacts to visitor use and experience was identified. Likewise, the many improvements to a clearly-marked, sustainable, formalized trail system under the selected alternative will have highly beneficial impacts to visitor access, information sharing, circulation, and overall quality of the visitor experience.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement. The selected action will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA. Environmental impacts that could occur are limited in context and intensity, and the action will result in effects that will primarily benefit monument resources and visitor experiences over the long-term. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, highly significant cumulative effects, or elements of precedence were identified. Also, implementation of the selected action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an environmental impact statement is not required for this project and thus will not be prepared.

APPENDIX A

ADDITIONAL MITIGATION MEASURES AND MONITORING

Protect Ethnographic Resources and Archeological Resources

- Cultural resources will be considered during all phases of planning and implementation of the visitor use management plan. Archeological surveys have been completed for almost the entire monument. Many of the current trails in the monument pass through or near historic and prehistoric sites. In addition, administrative roads/trails may use historic routes. The greatest risks to these sites include continued use by visitors and pets and ground-disturbing activities, such as those associated with visitor-created trail use, trail construction, maintenance, closure, and installation of trail upgrades. All trail corridors that may be subject to maintenance or restoration will be reviewed by subject matter experts meeting or exceeding the Secretary of Interior's Standards. Section 106 compliance will be completed on a project-by-project basis.
- Adverse effects on National Register eligible archeological sites will be avoided if at all possible. If not, then the National Park Service will consult with the State Historic Preservation Officer and other consulting parties, including traditionally associated pueblos and tribes, to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties under a Memorandum of Agreement. The National Park Service shall notify the Advisory Council on Historic Preservation of the adverse effect finding and the preparation of a Memorandum of Agreement and invite the council to participate in the consultation.
- Mitigating potential adverse effects to archeological sites with trails passing through them will be accomplished in consultation with the New Mexico State Historic Preservation Office, traditionally associated pueblos and tribes, and other consulting parties. Site protection measures will be employed, that may include but will not be limited to, protecting the surface of the site on and adjacent to the trail with geo-technical fabric, adding clean fill soil as a second protective barrier over the fabric, replanting native vegetation in the clean fill material, and reconstructing the trail in the fill soil across the protected site.
- Where ground disturbance is involved, an archeologist will be on-site to monitor the project work.
- Prior to rehabilitating or restoring abandoned trails, relevant cultural resources review and any applicable surveys will occur.
- Should previously unknown historic or prehistoric resources be unearthed during project implementation, work will be halted in the discovery area, the site secured, and a qualified cultural resource management specialist notified if not already present. The area will be examined as soon as possible and the procedures of 36 CFR Part 800.13[c] will be followed.
- In the event that human remains are discovered during maintenance activities, all work on the project must stop and park archeologist contacted immediately. As required by law, the coroner will be notified first. All provisions outlined in the Native American Graves Protection and Repatriation Act (1990) will be followed.

Protect Natural Resources

- Removal of, or impact on, native vegetation adjacent to trails will be minimized as much as possible. The trail construction activity will be confined to the minimum area required for construction. All staging and stockpiling areas will use existing disturbed lands to the extent possible and be rehabilitated to natural conditions following trail construction.
- Project personnel will make daily checks of clothing, boots, laces, and gear to ensure no exotic plant seeds or reproductive parts are transported to the work site.
- Areas used by visitors will be monitored for signs of native vegetation disturbance and for the presence of new exotic species of plants. The park will use a variety of mitigation tools such as public education, erosion control, and barriers to control visitor use impacts on vegetation.
- Impacted bare areas (e.g., old trail sections that have been realigned, impacted areas along the trail corridor) will be scarified and regraded to reestablish the original surface contours and allowed to naturally revegetate or be planted and/or seeded with native species to minimize erosion. Determination of treatment (natural revegetation or seeding) will be done on a case-by-case basis and will seek to reconstruct the natural spacing, abundance, and diversity of native plant species as much as possible.
- Any required fill, rock, topsoil, or other earth materials will be sourced from approved sites (e.g. both in-monument and outside of the monument).
- Resource management staff will provide trail crews with an orientation/briefing that will appraise them of and sensitize them to relevant natural resource issues and the importance of minimizing impacts. The resource management division will be notified and consulted when wildlife must be disturbed or handled. Staff will assist with handling and moving snakes and other wildlife, when necessary.
- Soils and other materials will not be placed within arroyos or drainages to avoid potential sedimentation during rain events.
- Substantial ground-disturbing work will be scheduled to occur outside of anticipated heavy rain events. Erosion control devices will be used as necessary.
- Conduct plant and wildlife surveys to ensure routes of new trails do not destroy or alter special or rare vegetation, plant communities, and important wildlife habitat.
- Conduct vegetation removal work outside of the peak bird breeding season, typically March through August for most species, to the maximum extent practicable.
- If vegetation removal activities cannot occur outside the bird nesting season, conduct surveys prior to scheduled activity to determine if active nests are present within the area of impact. If active nests or breeding behavior (e.g., courtship, nest building, territorial defense, etc.) are detected during these surveys, no vegetation removal activities should be conducted until nestlings have fledged or the nest fails or breeding behaviors are no longer observed. Contact the Resource Management office if active nests or breeding behaviors are observed.

Protect Natural Soundscapes

- Create interpretive materials that instill a culture of awareness of and respect for the value of natural soundscapes.
- Advise visitors and monument staff about the growing impact of loud vehicles, motors, and other unnecessary noise disturbances (e.g., radios).
- Enforce existing noise ordinances (36 CFR §2.12). 36 CFR §2.12 is a federal regulation related to audio disturbances and prohibits noise that "... exceeds a noise level of 60 decibels measured on the A-weighted scale at 50 feet..." Regulations also define this as "noise which is unreasonable, considering the nature and purpose of the actor's conduct,

location, time of day or night, purpose for which the area was established, impact on park users, and other factors that would govern the conduct of a reasonably prudent person under the circumstances."

- Implement standard noise abatement measures during construction activities. Standard noise abatement measures may include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive uses; the use of best available noise control techniques wherever feasible; the use of quieter impact tools when feasible; the use of hand tools when feasible; the placement of stationary noise sources as far from sensitive uses as possible; and the use of noise-muffling, shielding, or fencing. Functioning mufflers will be installed and maintained on all motorized equipment. Engine idling will be reduced or eliminated.

Visitor Use and Experience

- Public notification via the monument's website at www.nps.gov/petr will provide updates should there be any trail closures for visitor planning purposes. This website will also provide updates on work that has been accomplished and access to trail sections as they become available.

APPENDIX B

ERRATA SHEET AND RESPONSE TO PUBLIC COMMENTS

Visitor Use Management Plan / Environmental Assessment

Petroglyph National Monument

November 2018

The following errata and response to public comments together with the Finding of No Significant Impact (FONSI) and the Environmental Assessment (EA) describe the final decision of the National Park Service for the Visitor Use Management Plan (VUM Plan/EA). This document has two parts:

- Part 1 discusses changes to text in the VUM Plan/EA and FONSI
- Part 2 is a summary of the substantive comments received during the public review, with NPS responses. Some of these comments resulted in slight modification of the document and are noted in the text changes errata below.

PART 1 - ERRATA - TEXT CHANGES

In response to public and agency comments, several changes were made to the EA. In reference to the VUM Plan/EA, the page number and topic heading are shown in **bold** text. Original text from the VUM Plan/EA is identified first to allow for comparison to the text change.

Page vi, Glossary of Key Terms

Additional Text: **Multiuse** – For this planning effort, multiuse refers to bicycling and hiking opportunities together.

Page 23, Secondary Access Points

Original Text: Secondary access points would be reduced from 52 to 24. These include 12 below the escarpment and 12 above the escarpment on the Mesa Top (figure 4). From every secondary access point, there would be a designated trail leading to the monument's formalized trail system, either below or above the escarpment.

Text Addition: Although figure 4 shows general locations, final locations would be determined as the plan is implemented.

Page 24, Formalized Trail System

Original Text: The proposed 39-mile formalized trail system would be comprised of the 8 miles of existing designated trails, 20.5 miles of visitor created trails and former roads that would be converted to designated trails, 9 miles of the administrative roads, and 1.5 miles of the utility access corridors that would be specifically authorized for non-motorized visitor use. It would include new short connector trails, escarpment crossings, and short reroutes. The remaining 18 miles of administrative roads and 7.5 miles of utility access corridors would not be open for visitor use and would not be maintained as part of the formalized trail system.

Text Change: The proposed 39-mile formalized trail system would be comprised of the 8 miles of existing designated trails, 20.5 miles of visitor created trails and former roads that would be converted to designated trails, 9 miles of the administrative roads, and 1.5

miles of the utility access corridors that would be specifically authorized for non-motorized visitor use, all of which are shown in appendix B in tables B-2 and B-3. The remaining 7.5 miles of utility access corridors would not be maintained as part of the formalized trail system.

Original Text: **Designated Trails.** Under alternative 2, the 8 miles of designated trails listed in appendix B in table B-1 under alternative 1 (no action) would remain; however, the type of use is different for the Rinconada Canyon Trail and in the Volcanoes area (appendix B). In addition, approximately 31 miles of proposed trails would be added to the formalized trail system as shown in appendix B in tables B-2 and B-3.

Text Change: **Designated Trails.** Under alternative 2, the 8 miles of designated trails listed in appendix B in table B-1 under alternative 1 (no action) would remain; however, the type of use is different for the Rinconada Canyon Trail and in the Volcanoes area (appendix B). In addition, approximately 20.5 miles of proposed trails would be designated.

Page 26, Administrative Roads

Original Text: The remaining 18 miles of roads would be closed to visitor use and used only when it is deemed necessary to conduct specific project work, for safety and security purposes, or other approved requests; some may be restored after evaluation.

Text Change: Delete text.

Page 26, Administrative Roads, *Utility Access Corridors*

Original Text: The remaining 7.5 miles of existing utility access corridors would not be used for pedestrian use.

Text Change: The remaining 7.5 miles of existing utility access corridors would not be maintained as part of the formalized trail system.

Page 30, Actions Considered But Dismissed, Use of Horses in Monument

Original Text: **Use of Horses in the Monument.** Horses have been allowed on the Mesa Top of the monument along existing roads and corridors. While use of horses on the Mesa Top has been permissible, there has been very little clarity on which roads/trails can be used and the creation of visitor-created trails has added confusion. In the past 5 to 10 years, horse use within the monument has been extremely sparse to nonexistent. The potential impacts from horse use on monument resources such as erosion and soil compaction have been considered, especially should horses be inadvertently or advertently taken off-trail. Several studies report that even low levels of horse use result in more severe impacts to soils, vegetation, and trails than from hikers or other users because of greater weight per unit area of a horse and rider compared to a person (Pickering et al. 2009). Erosional impact from horseback riding to archeological resources would therefore be expected to be greater than hikers or bicyclists.

Text Change: **Use of Horses in the Monument.** According to the *Petroglyph National Monument Superintendent's Compendium 2017*, the use of horses, burros, mules or other hoofed mammals is not currently permitted (allowed) within Petroglyph National Monument. In the past 5 to 10 years, horse use within the monument has been extremely sparse to nonexistent. The potential impacts from horse use on monument resources such as erosion and soil compaction have been considered, especially should horses be inadvertently or advertently taken off-trail. Several studies report that even low

levels of horse use result in more severe impacts to soils, vegetation, and trails than from hikers or other users because of greater weight per unit area of a horse and rider compared to a person (Pickering et al. 2009). Erosional impact from horseback riding to archeological resources would therefore be expected to be greater than hikers or bicyclists.

Page 61, Diversity of Visitor Experiences and Opportunities

Original Text: Under alternative 2, the overall diversity of experiences available in the monument would be adversely impacted. Leashed dog walking would be allowed on the formalized trail system, except for on trails within the Boca Negra Canyon area, the northern section of Rinconada Canyon trail, and to the tops of JA and Black volcanoes. Bicycle use would be limited to two miles of trails. Limiting bicycle use and access for dog walkers would adversely affect visitor experience by reducing the types of available activities and opportunities to enjoy the monument.

Text Change: Under alternative 2, the overall diversity of experiences available in the monument would be adversely impacted. Leashed dog walking would be allowed on the formalized trail system, except for on trails within the Boca Negra Canyon area, the northern section of Rinconada Canyon trail, and to the tops of JA and Black volcanoes. Bicycle use would be limited to two miles of trails. Horseback riding would be prohibited, which would adversely affect visitor experience by reducing the types of available activities and opportunities to enjoy the monument; however, as noted in the affected environment, in the past 5 to 10 years, horse use within the monument has been extremely sparse to nonexistent.

PART 2 - RESPONSES TO COMMENTS

The VUM Plan/EA was made available for public review and comment starting November 1, 2018 and ending on November 30, 2018. A request was made by the American Horse Council and New Mexico Horse Council on November 30, 2018 to extend the public comment period. The NPS extended the public comment period to December 14, 2018. The document for review was posted to the NPS PEPC website and made available in hardcopy at public open house meetings. Public meetings were held on November 14 and November 15, 2018 at two different locations in Albuquerque, NM. Including tribal correspondence, a total of 106 pieces of correspondence were received.

Many comments address issues already adequately covered in the VUM Plan/EA. Comments addressed cultural and natural resources; visitor use, experience, and access; collaboration with key partners and stakeholders; and, level of public involvement and compliance. Some received comments were about broader issues that were outside the scope of this planning effort. Substantive comments, or nonsubstantive comments that were identified as being of high importance to the public or needing clarification are addressed below. Any changes to the document are shown in errata sheets attached to this Finding of No Significant Impact.

Protection of Cultural and Natural Resources

- Comment Topic: Some commenters felt that the thresholds for some of the indicators for the monitoring program are set too high.

NPS Response: The NPS stands by the rationale for these indicators and thresholds that are presented in the EA. The NPS will continue to engage social science experts and implement best management practices. As indicated in the VUM Plan/EA, the NPS will develop monitoring protocols to measure important changes in resource and experiential conditions to identify when a corrective action may be needed to ensure continued protection of the monument's natural and cultural resources. As monitoring continues, the NPS may modify or add indicators and thresholds to improve resource protection.

Visitor Use, Experience, and Access

- Comment Topic: Commenters expressed concern for the proposed closing of several access points into the monument, specifically the walk-in-access at the end of Lyons Blvd. Commenters argued this connection is heavily used by the surrounding community.

NPS Response: As the NPS and the City of Albuquerque's Open Space Division implement the plan, we will phase the closure and rehabilitation of access points. The NPS will continue to communicate with adjacent neighborhood associations during implementation. The NPS will continue to work closely with adjacent land developers to provide monument access opportunities where appropriate. Language has been added to the VUM Plan/EA as an errata to clarify this process (see Appendix B Part 1 of this document).

- Comment Topic: Some encouraged the formalization of a trail along the foot of the mesa escarpment, instead of trails on the top of the mesa, for better viewing of the petroglyphs.

NPS Response: The intent of the VUM Plan/EA is to address the confusion created by the myriad of routes within the monument, to protect monument resources, and to enhance visitor experience. The NPS hopes to do this by formalizing 39 miles of designated trail, restore visitor-created trails and old roads where appropriate, and reduce the number of access points from 57 to 30 into the monument. Under the selected alternative, the new formalized trail system would provide outstanding opportunities for a variety of hiking experiences with differing trail lengths in a variety of monument settings. Utilizing former roads in the Mesa Prieta area, a trail will be established to provide additional access to viewing petroglyphs. Petroglyph viewing opportunities along the base of the escarpment will be expanded at Rinconada Canyon and Piedras Marcadas Canyon. Wayfinding and informational signage will reduce confusion, and educational and interpretive opportunities will provide enhanced visitor understanding and appreciation.

- Comment Topic: Commenters encouraged expanded bicycle use within the monument. Commenters argued there are limited impacts to natural/physical resources and trails from bicycle use, and bicycle use should, therefore, continue to be allowed in the monument. Commenters stated there is limited evidence of conflicts between different user groups, and they have only seen respectful interactions on the trails when there are encounters with different users.

NPS Response: The selected alternative allows the use of 2 miles of trail for connectivity with the city's trail network and bicycle use. The decision to restrict bicycle use in the

monument is not due to user conflicts or impacts to natural/physical resources, but is, instead, due to the focus on protecting ethnographic resources. From page 47 of the VUM Plan/EA: "Based on consultation with traditionally associated pueblos and tribes, because bicycle use would be confined to 2 miles of designated multiuse trails not within the Volcanoes area, the presence of bicyclists within the monument would be less intrusive to the inherent peaceful, sacred qualities of the volcanoes and their setting and would be more respectful of the traditional associations that the pueblos and tribes have with the area."

- **Comment Topic:** Some commenters stated that horse use allows for a more diverse range of visitor experiences. Commenters requested that equestrian access near the Boca Negra Horseman's Complex remain available for use and that the NPS facilitate connectivity.

NPS Response: In regards to the use of horses in the monument, language has been added to the VUM Plan/EA as an errata to clarify this process (see Appendix B Part 1 of this document). In the past 5 to 10 years, horse use within the monument has been extremely sparse to nonexistent. Horse use has been accommodated on land adjacent to the monument at the Boca Negra Horseman's Complex. The VUM Plan/EA only addresses the area within the monument's boundary (green area shown on page 1 of the VUM Plan/EA). The plan does not affect Open Space areas outside of the monument (shown in gray on pg. 2 of the VUM Plan/EA); it does not affect the Boca Negra Horseman's Complex. We will continue to work with adjacent landowners, including the City of Albuquerque's Open Space Division, to maintain and improve a range of opportunities and connectivity.

NPS Guidance and Stakeholder Engagement

- **Comment Topic:** Comments were received on whether the correct NEPA "pathway" was followed in preparation of an environmental assessment versus an environmental impact statement.

NPS Response: An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the quality of the human environment (43 CFR 46.400). Because the selected alternative will not significantly affect the quality of the human environment, an EIS is not required. The intent of this VUM Plan/EA is to provide a current assessment of impacts to Monument resources and identify and formalize a sustainable trail system that provides a range of opportunities for visitors to explore Petroglyph National Monument. This VUM Plan/EA is consistent with the general guidance of the GMP/EIS, with the exception of eliminating horse use in the monument. This amendment to the GMP/EIS helps the park better meet GMP statutory requirements, specifically the requirements to provide "measures for the preservation of the area's resources" and "identification of and implementation commitments for visitor carrying capacities." (54 USC 100502).

In addition, under the 2012 NPS planning guidance, visitor use management plans are considered to be implementation level plans and can meet the General Management Plan (GMP) requirements to identify and implement visitor capacities by including detailed direction and analysis that is consistent with or amends a national park unit's GMP. Petroglyph National Monument has no prior identification of visitor capacity. The intent of this VUM Plan/EA is to provide a current assessment of impacts to Monument resources and identify and formalize a sustainable trail system that provides a range of opportunities for visitors to explore Petroglyph National Monument. This VUM Plan

would amend the visitor use management aspect of the GMP in regards to formalizing a comprehensive trail system, identifying access points, and clarifying the types and amounts of visitor use appropriate in different areas of the Monument. It is sufficient for the NPS to use an environmental assessment to address this topic of visitor use management.

- Comment Topic: A commenter felt that the GMP has "expired".

NPS Response: Petroglyph National Monument's 1997 general management plan continues to provide relevant guidance and remains a critical piece of the park's planning portfolio similar to other park GMPs. The GMP continues to be updated and/or supplemented through the development of additional park planning documents to guide management decisions as conditions and needs change. This VUM Plan/EA fulfills a park planning priority for protection of its unique cultural and traditional resources, uses and values, and serves as a component of the park's planning portfolio. The planning portfolio for Petroglyph National Monument consists of the individual planning documents, which together guide park decision making. The planning portfolio enables the use of targeted planning documents (such as this one) to meet a broad range of park planning needs and fulfill legal and policy requirements.

- Comment Topic: A commenter felt there should be an alternative considered that focuses on enhancing protection of the monument's cultural and natural resources by prohibiting access and use of the volcanoes, prohibiting all horse and bicycle use in the Monument, and further limiting trails and access points.

Response: The NPS believes this is not a reasonable alternative. This alternative would not meet the purpose and need for the plan. It would restrict access to a degree that conflicts with the enabling legislation of the park and the NPS Organic Act. Section 105 of the Monument's enabling legislation (P.L. 101-303), directs NPS to administer, manage, and protect the monument in such a manner as to preserve, for the benefit and enjoyment [emphasis added] of present and future generations, its cultural and natural resources, and to provide for the interpretation of and research on such resources. Further, the mission of the National Park Service as stated in the NPS Organic Act is to preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. Given both the Monument's establishing legislation and the NPS mission, the NPS believes that the trail network and activities identified in the selected alternative are compatible with the Monument's purpose, significance, and the legislation that established the Monument.

- Comment Topic: Commenters emphasized the importance of considering tribal perspectives in the planning process. Sites of tribal significance/sensitivity should be considered when defining a trail network and determining appropriate uses.

NPS Response: The NPS will continue to consult with the monument's 29 traditionally associated pueblos and tribes as we implement the VUM Plan/EA and on other activities occurring within the monument. See the "Native American Consultation" section on page 9 of the FONSI for specifics on tribal consultation efforts for this planning process.

- Comment Topic: Commenters emphasized the importance of working with land managers adjacent to the monument and partner with the city to facilitate multiuse trails

outside of the monument to ensure these recreational opportunities are available in the appropriate context and location.

NPS Response: The NPS will continue to work closely with the City of Albuquerque's Open Space Division, adjacent landowners, neighborhood associations, and other interested stakeholders, in planning efforts to facilitate recreational opportunities on adjacent lands.

APPENDIX C

DETERMINATION OF NON-IMPAIRMENT

Petroglyph National Monument Visitor Use Management Plan / Environmental Assessment

The National Park Service (NPS) *Management Policies 2006* require analysis of potential effects to determine whether actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts to park resources and values.

However, the laws do give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within the park, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of these resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment, but an impact would be more likely to constitute an impairment when there is a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;

- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action would have major (or significant) effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, the topics remaining to be evaluated for impairment include: ethnographic resources (including cultural landscapes), archeological resources, and soils.

Ethnographic Resources (including Cultural Landscape)

Ethnographic resources and the cultural landscape of the monument lands are integral to the legislated purpose of this national park unit and its significance. These are considered fundamental resources and values of the park unit. Through study and consultation with tribes and pueblos over the years, the NPS has learned that many of these communities in the region trace cultural-historical associations with this 17-mile basalt escarpment. The features of spiritual significance to the traditionally associated pueblos and tribes include the volcanic features, the escarpment, and petroglyphs. These resources and the cultural landscape of the monument are considered sacred to traditionally associated people and serve as a direct connection to their ancestors. The petroglyphs are viewed by pueblo communities as shrines, a living reminder of a connection between the past and present, and the natural and supernatural realms. These significant ethnographic resources are inseparable from the greater cultural landscape, which includes the five volcanic cones within the monument. Viewsheds are also critical elements of the larger cultural landscape.

Under current management, the lack of designated trails and appropriate signage has caused a proliferation of visitor-created trails across these ethnographic resources. Impacts have been compounded by the effects of neighborhood encroachment and increased visitation. Because of the openness of the terrain, scarring and erosion caused by visitor-created trails and access points are highly visible and detract from the viewsheds. Given the nonformalized nature of the monument's trail system, both intentional and unintentional damage to the petroglyphs is occurring. They are vulnerable to destruction caused by touching, rubbing, or highlighting with chalk or other materials. Non-sanctioned activities such as vandalism, graffiti, and dumping garbage have also physically impacted the integrity of these resources. Given this sacredness and the connection to the monument's purpose, these resources warrant enhanced management to protect them from these threats.

The selected alternative will have many beneficial effects on ethnographic resources and the cultural landscape. The closure of 93.5 miles of visitor-created trails and former roads and rehabilitation of 27 informal access points will greatly reduce the physical damage to the escarpment. Sustainable trail design techniques will ensure visual compatibility of the remaining

formalized trails with the surrounding landscape. The associated viewsheds from the valley to the monument will also be improved. Limiting bicycle use will reduce erosion and soil compaction in the exposed volcanic area and Mesa Top, and reduce the potential creation of unauthorized bike paths elsewhere in the monument. The implementation of new management strategies, including monitoring, rerouting or closure of individual trails, and increased visitor education, will greatly reduce the potential for damage to resources and help maintain the integrity of individual ethnographic resources, including the escarpment, volcanoes, and petroglyphs. Based on consultation with the traditionally affiliated tribes and pueblos, continued visitor access to the tops of Black and JA volcanoes will have some continued localized, adverse impacts to these features. Thus, none of these impacts will result in impairment of the monument's ethnographic resources and cultural landscape.

Archeological Resources

Archeological resources are also integral to the legislated purpose of the monument and its significance. Petroglyph National Monument was established to preserve and protect the petroglyphs and other significant archeological sites within its boundaries. The monument protects approximately 350 archeological sites and the Las Imágenes Archeological District, which includes more than 20,000 petroglyphs. Beginning 2,000 to 3,000 years ago, these petroglyphs were etched by native peoples (hunter-gatherers and Ancestral Puebloan people) and early Spanish shepherders. Also, historic road alignments recently identified in the monument are small segments of the longer circulation networks that existed as past transportation routes. These routes connected the ancestral and contemporary Pueblo villages to the petroglyphs and other natural and archaeological resources.

Under current management, archeological sites in proximity to trails can be damaged by off-trail pedestrian trampling and soil compaction, off-trail bicycle use, vandalism, rock stacking, leaving memorials/offerings, and collecting artifacts. The lack of designated trails and appropriate signage compounds these impacts, as visitor-created trails get routed through areas that warrant protection and/or more sustainable trail alignments. Visitor-created trails also intercept overland surface run-off associated with rain events. This channelized run-off can incise trails, exacerbate soil erosion, and threaten in situ archeological resources.

The selected alternative will mainly have many beneficial effects on the archeological resources in the monument. The substantial reduction of visitor-created trails (93.5 miles), and the closure, restoration, or rehabilitation of approximately 27 informal access points will provide beneficial, direct impacts to archeological sites in those areas along the escarpment. This restoration will stabilize soils around these sites, and thus mitigate the adverse effects to archeological resources (e.g., from erosion and compaction caused by visitor-created trails). Enhanced interpretation signage, increased ranger presence, and trail watch volunteers will add an additional measure of site protection. Other resource management actions such as improved documentation and monitoring of petroglyphs and archeological sites will result in long-term, beneficial impacts to archeological resources monument-wide. Collectively, these management strategies and mitigation measures will have a beneficial impact on the physical condition and the integrity of archeological resources. Thus, the selected alternative will not result in impairment of archeological resources in the monument.

Soils

Soils are a key element of the broader geologic resources at the monument, which has been identified as a fundamental resource and value of this national park unit. Thus, the integrity of the soils is directly correlated to the integrity of the legislated purpose of the monument. Much of the monument's geology is tied to the past volcanic processes of the region and includes

volcanic cinder cones, lava flows, and dramatic surface erosional features. The overlying soils in the monument are generally very susceptible to wind and water erosion, especially on steep slopes. More specifically, many trails below the escarpment such as those in Rinconada Canyon and Piedras Marcadas Canyon are in aeolian sands. Aeolian sand is soft, unstable, and easily eroded by water and wind. Areas with a lot of aeolian sands tend to have a more open and spread-out pattern of vegetation, which can make trail routes unclear and result in numerous visitor-created trails developing.

Under current management, there are currently numerous visitor-created trails through aeolian sands in the canyons that experience high levels of visitor use associated with petroglyph viewing. Many of the monuments' petroglyphs are also located within the slope of the escarpment, and thus nonformalized visitor access to these petroglyphs has a high potential for erosion in these areas. Numerous visitor-created trails also originate from adjacent neighborhoods from multiple access points that currently exist. In addition to direct erosion of soils from visitor hiking and bike traffic, poorly aligned, visitor-created trails also alter natural drainage patterns and intercept runoff flow associated with rain events. This channelized runoff, which often incises trails, exacerbates soil erosion and sedimentation. Gully formation can progress rapidly during heavy rain events, with uphill and down-slope impacts, potentially undercutting boulders and redepositing sediment into lower-lying areas that can bury monument resources.

The selected alternative will have many beneficial effects on the monument's soil resources. The passive and active restoration of a majority of existing visitor-created trails and former roads (93.5 miles) coupled with improved sustainability and signage of trails retained as designated will notably reduce the extent of ground impacts and eliminate many areas of localized soil erosion, compaction, and gully formation. Although complete vegetation restoration and soil stabilization along closed routes may take several years and is dependent on climate conditions among other factors, these actions will allow for a gradual recovery of soil structure and function across much of the monument over time. In addition, improved control and monitoring of monument access points and prevention of new visitor-created trail development will help minimize or prevent new soil impacts from developing in the future. Trail stabilization and trail construction projects implemented under the selected alternative will adversely impact soils along portions of the proposed 39 miles of formalized trails and at access points (where stabilization is needed). However, there will be only small, localized amounts of new disturbance and the effects will be short term, likely lasting no more than one construction season. Given the above impacts the selected alternative will not result in impairment of the monument's soil resources.

