



National Park Service
U.S. Department of the Interior

WALNUT CANYON

National Monument • Arizona



Final Environmental Impact Statement General Management Plan

January 2007

Final Environmental Impact Statement
Final General Management Plan

WALNUT CANYON

National Monument • Arizona

SUMMARY:

This general management plan will guide the management of Walnut Canyon National Monument for the next 10 to 15 years. Three alternatives were considered - a no- action and two action alternatives, including the National Park Service preferred alternative. The preferred alternative would preserve untrailed expanses, unfragmented natural systems, and relatively pristine conditions throughout much of the park. It would protect Walnut Canyon as a critical wildlife corridor. Visitation would be managed with the goal of providing quality learning opportunities in an intimate atmosphere while maintaining the health of the canyon ecosystem. The natural soundscape and tranquil setting of the canyon would be enhanced through strategic placement of facilities. The park would remain day- use only, with recreational uses of the western end prohibited. Efforts would be made to provide a broader range of educational offerings, and a greater number of archeological sites would be available for visitation. The environmental impact statement assesses impacts to archeological resources; historic character of built environment; ethnographic resources; natural systems and processes; threatened, endangered, and sensitive species; wetlands, floodplains and riparian resources; visitor experience of park resources; park neighbors; local, state, and tribal land management plans; land/resource managing agencies; and operational efficiency.

Direct questions and send comments to:

Superintendent
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SUMMARY

The purpose of the general management plan is to provide a comprehensive direction for resource preservation and visitor use and a basic foundation for decision making for the monument for the next 15 to 20 years. The plan prescribes the resource conditions and visitor experiences that are to be achieved and maintained in the park over time. The clarification of what must be achieved according to law and policy is based on review of the park's purpose, significance, and special mandates.

The plan will outline the kinds of resource management activities, visitor activities, and development that would be appropriate in the monument in the future. However, the plan will not propose specific actions or describe how particular programs or projects will be implemented or prioritized. More detailed site-specific analysis of alternatives and specific proposals will be required in subsequent phases of planning before any major federal actions are undertaken. Two action alternatives and a no-action alternative are presented, and the impacts of implementing those alternatives are analyzed. A brief summary of the major actions under the alternatives, as well as the actions that are common to all alternatives and the impacts thereof, are presented below.

The Next Step

This Final Environmental Impact Statement/General Management Plan, which includes agency and organization letters and response to all substantive comments, has been distributed. After distribution of this final plan, there will be a no-action period of at least 30 days. After this no-action period, a final plan will be selected and approved by the National Park Service and a Record of Decision will be issued to document the approval.

Actions Common to All Alternatives

Within the broad parameters of the park mission and mission goals, various approaches to park resource protection, use and development are possible.

Management zones are the tool this plan uses to identify how different areas of the park could be managed to achieve a variety of resources and social conditions to serve recreation and resource protection needs. Each zone specifies a particular combination of physical, biological, social and management conditions. Seven possible zones were described that could be appropriate to various area in Walnut Canyon National Monument. They are the resource preservation zone, the extended learning zone, the guided adventure zone, the motorized sightseeing zone, the natural area recreation zone, the overview zone, and the administrative zone.

Common to all alternative are short-range planning efforts already underway to meet immediate operational needs that will continue to exist regardless of the alternative selected. These are identified in National Park Service-wide initiatives, in Flagstaff Area National Monuments planning documents, such as the Strategic Plan, Annual Performance Plan, Comprehensive Interpretive Plan, Fire Management Plan and Resources Management Plan, and in local action plans to resolve safety, accessibility, facility maintenance, resource protection, and similar issues.

All alternatives presented recognize the opportunity for partnerships, for the protection of cultural and natural resources, with the USFS, the State of Arizona, Coconino County, the city of Flagstaff and private landowners.

Planning and design new wayside exhibits and museum exhibits is in progress, in

accordance with the Flagstaff Areas Comprehensive Interpretive Plan, to improve visitor understanding and appreciation of Walnut Canyon resources.

New wayside exhibits will replace and expand the existing system of interpretive signs along the entrance road and at major existing visitor use areas. New museum exhibits will replace the outdated and inaccurate exhibits at the existing visitor center.

The backcountry of Walnut Canyon National Monument (defined as all areas beyond designated roads, trails, or developed facilities within the monument) is closed to unguided entry. This policy will continue in all alternatives.

A temporary exception was made for the lands acquired in the 1996 boundary expansion, where most existing uses have been allowed to continue, pending boundary surveys and resource inventories. Although the alternatives allow activities in some areas, in those areas designated as resource preservation zone, there will be no unguided access. The closure will be made permanent through the formulation and publishing of a special regulation.

No-Action Alternative: Existing Conditions

This alternative describes the continuation of current management and trends; it serves as a basis for comparing the other alternatives.

Walnut Canyon National Monument is seven miles east of Flagstaff and is reached via a three-mile paved entrance road from I-40. An entrance station is located ¼ mile north of the visitor center. There are three small picnic areas along the entrance road and another larger one near the visitor center.

The road terminates in a parking area at the visitor center, which contains an

information/fee collection desk, exhibits, a bookstore and an observation room. Maintenance facilities and park housing are located nearby.

Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night. Access is limited to established trails, roadways and developed facilities. Areas not designated and identified for public activities are closed to unguided entry.

Orientation and interpretation are accomplished primarily through the visitor center and the self-guided trails. The Island Trail, which descends 185 feet into the canyon is one of the best ways to experience the park.

Under the No-Action Alternative visitors, particularly those with an interest in cliff dwellings and the physical ability to access them, will continue to benefit by the continuation of traditional interpretive programs. Some visitors will experience adverse impacts from the lack of opportunity to explore beyond the limited developed area available for public use.

Resources will continue to have an overall beneficial effect by continuation of current management. Archeological resource will benefit by concentrating visitor activities and park management activities within previously disturbed and stabilized sites. Adverse long-term visual impacts, caused by development for visitors, on the pre-historic scene and the CCC will continue, as will impacts caused by visitation such as vandalism. Resource impacts to natural resources are generally minor. Moderate beneficial to riparian resources would likely result from eliminating grazing from the eastern boundary expansion area. Continued disruption of flows within the watershed will have adverse cumulative impacts to wetland, floodplain, and riparian resources.

Alternative 1: Diversify Opportunities for Visitor Use

The goal of this alternative is to provide more diverse visitor experiences and access to more of the park, including areas acquired in the 1996 boundary expansion. Alternative 1 emphasizes easier access to different parts of the monument, in order to decrease congestion at the visitor center and on the Island Trail. There would be more choices and opportunities for different types of visitor experiences. A variety of motorized and nonmotorized activities would be spread across the area north of the canyon rim. A new scenic drive would be developed along the north rim to disperse use to a new area and provide different views of the canyon. A portion of an existing USFS road would be used to link to the new scenic drive.

The existing visitor center would be remodeled to accommodate more visitor use by removing administrative offices. Parking would be redesigned and relocated away from the canyon rim, and visitors would walk a short trail to the canyon edge. The park would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303. Installation of an entrance station/fee collection facility near the I-40 intersection would be considered.

This alternative would have adverse impacts on cultural resources. Allowing access to areas of the monument that are currently closed could adversely affect 20% of the archeological resources in the monument. Any impacts on archeological resources also constitute an adverse impact to ethnographic resources. Some of the adverse effect would be offset by increased visitor education and enhanced appreciation of the resources from expanded interpretive media. Alternative 1 would have adverse impacts on the

prehistoric landscape and the CCC/Mission 66 visitor center.

Natural resources would be both beneficially and adversely affected by alternative 1. Natural systems within Walnut Canyon would continue to recover from historic land use impacts. However, the combined impact of the new road system, trail corridors, and dispersed hiking across the entire north canyon rim would magnify adverse impacts such as unplanned trail segments, soil compaction, vegetation trampling, localized erosion, spread of nonnative plants, and noise and disturbance to wildlife.

Visitors wishing to experience a greater variety of park resources would gain major benefits from Alternative 1. Visitors interested in expanded exhibits and interpretive programs also benefit from this alternative, as would those with disabilities and those seeking recreational opportunities.

Alternative 2 (Preferred): Emphasize Preservation

This alternative would preserve untrailed expanses, unfragmented natural systems, and relatively pristine resource conditions throughout much of the park. Walnut Canyon would be protected as a critical wildlife corridor. Visitation to Walnut Canyon would be managed with the goal of providing quality learning opportunities in a quieter, more intimate historic atmosphere. This alternative would provide a glimpse of the remnants of the prehistoric community and canyon flora and fauna, while protecting sensitive features and maintaining the health of the canyon ecosystem. Preservation and protection of threatened and endangered species, preservation of riparian habitat, and maintenance of the long-term integrity of systems and natural processes would be emphasized.

Because past management of Walnut Canyon has worked well, this alternative explores ways to keep future visitor experience and resource protection comparable to today's, by providing better ways to handle any increased visitation. The natural soundscape and tranquil setting of the canyon would be enhanced by removing some facilities from the rim area and placing them in a relatively less sensitive area near I- 40. The park would remain day- use only, with the road gated at night near I- 40 and at FR303. Ticketing, reservation, or shuttle systems could be implemented in the future to alleviate traffic congestion and maintain quality visitor experiences. The new visitor center and parking lot would be designed to include collection of entrance fees and to be readily adaptable for shuttle system use if needed in the future. Current recreational uses in the western end of the monument would be redirected to nearby USFS lands.

This alternative would have adverse impacts on cultural resources. Allowing access to areas of the monument that are currently closed could adversely effect a small number of archeological resources in the monument. While impacts on archeological resources also constitute an adverse impact to ethnographic resources, the preservation of untrailed expanses and unfragmented natural systems would have a benefit on ethnographic resources.

Alternative 2 would have adverse impacts on the prehistoric landscape, the ranger

cabin landscape and the Mission 66 landscape. It would also benefit the prehistoric landscape by removing the Mission 66 portion of the visitor center and reducing the visual impact to the prehistoric canyon landscape.

Natural resources would be beneficially affected by Alternative 2. Natural systems within Walnut Canyon would continue to recover from historic land use impacts. Development of a new visitor center would have localized adverse impacts to the natural system. However, the new facilities would enable the future management of visitor crowding, traffic congestion, and resource degradation along the north-central canyon rim, offsetting impacts from constructing the facilities. The area outside those used by NPS facilities and visitors would be formally recognized as a resource preservation zone, which would beneficially impact natural systems and processes.

Visitors wanting a quieter, more educational experience will benefit from this alternative. The alternative reduces the intrusion of modern structures on the natural and historic scene. Other benefits include the ability to hear natural sounds and enjoy a less crowded experience. Visitors interested in expanded exhibits and interpretive programs also benefit from this alternative, as would those with disabilities.

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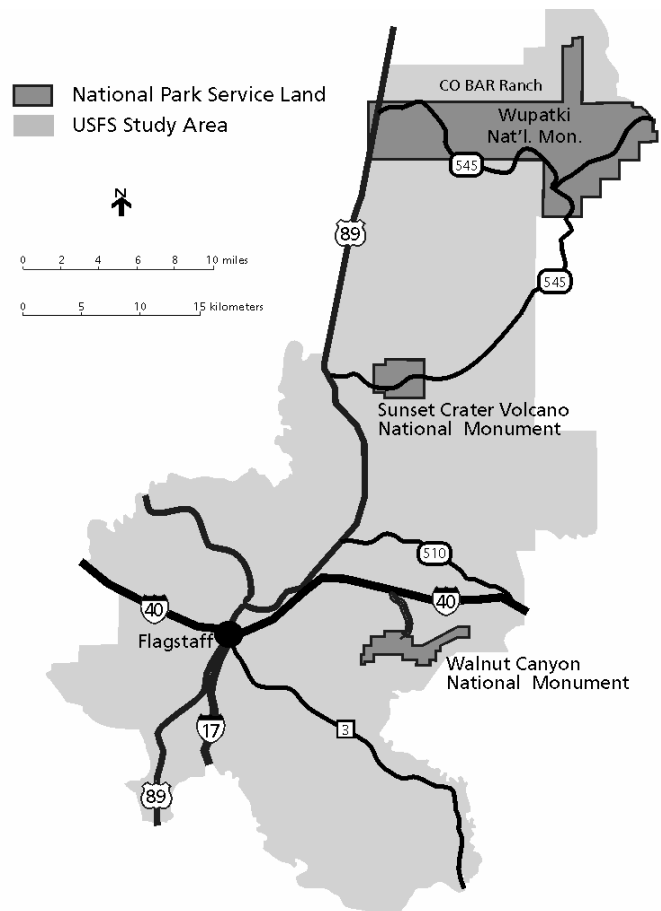
PURPOSE OF AND NEED FOR THE PLAN

PURPOSE OF THE GMP

The purpose of the general management plan (GMP) is to clearly define a direction for resource preservation and visitor use at Walnut Canyon National Monument (NM). It is the intent of this planning effort to provide a comprehensive direction for the next 10 to 15 years and to arrive at that direction through public participation. In fact this draft GMP is the result of extensive interaction with interested publics and affected government agencies begun in June 1996 (see Description of Scoping Process and Consultation and Coordination sections).

The approved plan will provide a framework for proactive decision making, including decisions on visitor use, natural and cultural resources management, and park development, which will allow park managers to effectively address future opportunities and problems. The general management plan will prescribe the resource conditions and visitor experiences that are to be achieved and maintained in the park over time. The clarification of what must be achieved according to law and policy is based on review of the park's purpose, significance, special mandates, and the body of laws and policies directing park management. Management decisions to be made where law, policy, or regulations do not provide clear guidance or limits will be based on the purpose of the monument, the range of public expectations and concerns, resource analysis, an evaluation of the natural, cultural, and social impacts of alternative courses of action, and consideration of long- term economic costs.

Some of those conditions and experiences are specified already in law and policy, whereas others are open to debate and must



Combined USDA - USFS Flagstaff/Lake Mary Ecosystems Analysis and DOI - NPS Flagstaff Area National Monuments General Management Plan Study Area

be determined through planning. Based on determinations of desired conditions, the plan will outline the kinds of resource management activities, visitor activities, and development that would be appropriate in the monument in the future. However, the plan will not propose specific actions or describe how particular programs or projects will be implemented or prioritized. Those decisions will be deferred to more detailed implementation planning, which will follow the broad, comprehensive decision making outlined in the general management plan.

NEED FOR THE GMP

There were many issues and concerns that precipitated the need for a GMP.

Administratively, the three parks of the Flagstaff Area (Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments) were combined under one superintendent in 1990. A boundary expansion of Walnut Canyon (approximately 1,333 acres) was added as part of the 1996 National Park Service (NPS) Omnibus Bill. Visitation has increased demands on park resources, resulting in documented loss of some resources through erosion, vandalism, erosion and theft.

Nationwide demographics and traffic patterns (Sunbelt migration, international visitors, aging of America, shorter vacations year- round) have increased peak visitation seasons and extended shoulder seasons. Flagstaff growth and housing development is occurring near park boundaries, impacting the visitor experience and remote character of the monument and increasing incompatible adjacent land uses. Traffic levels are increasing adjacent to and through the park; views are intruded on by mining operations, housing developments, and divided highways; and noise is increasing.

The development of Walnut Canyon created a use pattern that funnels all visitors to one place on the canyon rim. The parking area and part of the visitor center, built by the Civilian Conservation Corps (CCC), are inadequate for today's vehicles and visitation levels. Crowded conditions exist at times. No orientation material is available at the park entrance near I- 40. The entrance station is three miles south, near the visitor center, and the park is gated and closed at night at this location.

The visitor center has always had accessibility issues, which have been temporarily remedied but require a long-

term solution. Visitor center exhibits date to the 1960s. Interpretive media are outdated or inaccurate, and there is no consistent integrated message between this and the other two Flagstaff area parks. The park is a popular location for school outings, but there is no group facility, auditorium, or place to gather people indoors, and groups often exceed the capacity of facilities.

Park boundaries are poorly marked. The monument was expanded in 1996 (by the Omnibus Parks and Land Management Act) by transferring approximately 1,333 acres from U.S. Forest Service to NPS jurisdiction. The lands have not been surveyed or fenced, and there is some confusion on the part of public users regarding where USFS lands end and the monument begins. The new lands on the west side of the monument are within two miles of residential areas of the city of Flagstaff, and parts of the western boundary of the monument coincide with the corporate boundary of the city of Flagstaff. Forest resources include ponderosa pine, pinyon pine, and juniper, which attract woodcutters seeking personal firewood. Antelope, elk, and deer attract hunters and wildlife viewers. The Coconino National Forest administers several grazing permits for local ranchers in the lands adjacent to the monument. Local citizens have traditionally and currently used the surrounding forest areas for recreational activities, including horseback riding, recreational vehicle uses, hiking, camping, hunting, birding, woodcutting, shooting, and mountain biking. A section of the Arizona Trail passes the northwest corner of the monument and is used by local and regional visitors for recreational purposes. Because of this proximity, occasional inappropriate uses occur on monument property, including trespass, shooting, hunting, woodcutting, and vehicle travel.

Three state trust sections of land adjacent to, or within two miles of, the monument

could be offered for sale and development. Development could pose external threats in the form of increased unauthorized uses, trespass by animals, noise, and degradation of the viewshed.

Approximately 291 acres of private land exist inside the eastern boundary of the monument, and there is potential for development by the owner. Development of this private property could result in water impoundment behind a historic dam to create a lake that could possibly back up onto monument land. There is the potential for residential development and increased exposure of park cultural resources to trespass and inappropriate uses, resulting from residential development and the attraction of a lake.

The canyon has significant biological diversity and concentrations of threatened and endangered species. Affiliated tribes have identified traditional cultural properties within park boundaries and have concerns about public visitation to archeological sites.

In 1998, the staff of the Flagstaff Area monuments (Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments) undertook an in-depth review and analysis of staffing needs for the three monuments and for support positions in headquarters. This process identified critical positions in visitor services, protection, resource management, maintenance, and administration that are integral to accomplishing the purposes of the monuments and the National Park Service mission. This review evaluated existing conditions and personnel shortfalls in terms of National Park Service abilities to provide for a safe, educational visitor experience and for adequate protection and preservation of park resources. A number of positions were identified as critical to maintaining operations at acceptable levels, for both current and future needs. These

needs were identified prior to the general management planning process and are incorporated into the alternatives developed.

Reaffirm What Must Be Achieved

Each unit in the National Park System is guided by agency-wide and park-specific laws, regulations, and policies. Understanding this guidance and how it affects each park's mission is fundamental to planning for the park's future. This section highlights the mission (expressed as park purpose, significance, and mission goals) and legal and policy mandates that guide management of the park. These mission and mandate statements define the sideboards within which all management actions must fall. All alternatives to be considered in the general management planning effort must be consistent with and contribute to fulfilling these missions and mandates.

PARK MISSION

Walnut Canyon National Monument was established by Presidential Proclamation No. 1318 on November 30, 1915, to preserve the prehistoric ruins of ancient cliff dwellings. The monument was enlarged by Presidential Proclamation No. 2300 on September 24, 1938, and on November 12, 1996, by P.L. 104-333. On February 28, 1965, Public Land Order 1269 by the Bureau of Land Management withdrew public lands as material source sites and identified lands to construct a monument approach road. The monument occupies approximately 3,600 acres immediately adjacent to Coconino National Forest and to the city limits of Flagstaff, Arizona.

The park purpose for Walnut Canyon is:

- To protect ancient cliff dwellings and associated resources that are of great ethnographic, scientific, and educational interest and to properly

PURPOSE AND NEED FOR THE PLAN

care for and manage the cultural and natural resources of historic, social, and scientific interest within Walnut Canyon National Monument.

The park significance for Walnut Canyon is:

- Concentrations of ancestral Puebloan habitations are found in Walnut Canyon's "island" topography-the distribution, diversity, and location of sites are unusual and include the only cliff dwelling architecture of the Northern Sinagua culture. Walnut Canyon and Walnut Creek provide vivid evidence of the Sinaguas' ability to procure sufficient water to sustain life and grow crops.
- The natural and cultural resources within the monument are known to be significant to contemporary native tribes, as evidenced by oral history, continuing practices, and the archeological record.
- Within Walnut Canyon, ecological communities overlap to form ecotones, bringing together species usually separated by elevation, and creating a rare compression of flora/fauna zones. The biodiversity supported by these habitats includes a high concentration of sensitive species and is thought to have contributed to the decision of prehistoric people to settle here.
- Topographic relief and biotic diversity make the canyon an outstanding scenic resource. Together with adjacent forest lands, the monument serves as a significant component of a designated greenbelt and natural sanctuary surrounding the city of Flagstaff.
- Historic railroad settlements, such as Flagstaff, contributed to Walnut Canyon becoming one of the first archeological areas to be heavily visited. Some sites record the extensive looting of the period.

Today, owing to management that emphasizes preservation, Walnut Canyon National Monument provides scientific opportunities to study irreplaceable cultural and natural resources.

MISSION GOALS

Mission goals were developed for the three units in the Flagstaff Area National Monuments Strategic Plan (NPS 2000). They state that:

- Natural and cultural resources and associated values within the three Flagstaff Area monuments are protected and maintained in good condition and managed within their broader ecosystem and cultural contexts.
- Flagstaff Area National Monuments actively pursue acquisition of natural and cultural resource data through NPS staff and funding channels and through association with the scientific community. Current and complete scientific findings are available for communication to partners, integration into the interpretive program and use in the management decision process.
- Facilities, services, and recreational opportunities offered are in keeping with site-specific requirements of resource protection and visitor enjoyment. Safety measures are an integral part of the visitor experience.
- Through on-site and off-site education, the Flagstaff Area National Monuments promote visitor understanding of park purpose and significance, enhance appreciation and enjoyment, and promote an attitude of personal responsibility.
- Flagstaff Area National Monuments use current management practices, systems, and technologies to accomplish their missions.

- The Flagstaff Area National Monuments increase their capabilities through initiatives and support from other agencies, organizations, and individuals.

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

The monument has numerous special use agreements with other agencies:

Law Enforcement Agreements between USFS and NPS: National, regional, and local agreements exist that allow law enforcement operations on each other's lands.

Memorandum of Understanding with Coconino County Sheriff's Department: Outlines areas of responsibility within the national monument and provides for the deputization of NPS protection park rangers through the Coconino County Sheriff's department.

Interpretive Partnership: This partnership, which has been in operation for seven years, coordinates interpretive activities on NPS and USFS lands and encourages consistent messages through shared staffing.

Cooperative Agreement with Department of Anthropology, Northern Arizona University: Provides assistance to NPS for various cultural resource management activities, using NAU students and faculty to complete projects.

Memorandum of Understanding with Museum of Northern Arizona: Allows the museum to store and care for various artifacts from the three Flagstaff Area monuments, while retaining NPS ownership of the collection.

Cooperative Agreement with Western National Parks Association (WNPA): Allows WNPA to operate a bookstore in each of the Flagstaff Area monuments and headquarters, with support provided to NPS from those sales.

Billie Wells Special Use Permit: Allows permittee to operate and maintain a water line across the northwest corner of Walnut Canyon National Monument in connection with grazing operations. The water line runs across the monument just inside the northwest corner, then follows FS303, on the north side, to water storage tanks on the ranch north of the monument.

SERVICEWIDE LAWS AND POLICIES

As with all units of the National Park System, management of Walnut Canyon National Monument is guided by the 1916 act creating the National Park Service, the General Authorities Act of 1970, the act of March 27, 1978, relating to the management of the National Park System, and other applicable federal laws and regulations, such as the Endangered Species Act and the National Historic Preservation Act.

Many resource conditions and some aspects of visitor experience are prescribed by these legal mandates and NPS policies. Although the attainment of some of these conditions has been deferred in the monument because of funding or staffing limitations, NPS will continue to strive to implement these policies at the monument with or without a new GMP. The GMP is not needed to decide, for instance, whether or not it is appropriate to protect endangered species, control exotic species, improve water quality, protect archeological sites, provide access for visitors with disabilities, or conserve artifacts.

The conditions prescribed by laws, regulations, and policies most pertinent to the planning and management of the monument are summarized in this section.

Impairment

Current laws and policies require the analysis of potential effects to determine whether or not actions would impair park resources.

PURPOSE AND NEED FOR THE PLAN

Desired Condition	Source
<p>While Congress has given the Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement (enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.</p> <p>The impairment that is prohibited by the Organic Act and the General Authorities Act 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 those resources or values.</p> <p>Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.</p>	<p>Management Policies</p>

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 on park

resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent it affects 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 to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination of impairment is made in the Environmental Consequences section for each impact topic.

Cultural Resource Management Requirements

Archeological Resources

Current laws and policies require that the following conditions be achieved for archeological resources in the park:

Desired Condition	Source
<p>Archeological sites are identified and inventoried, and their significance is determined and documented.</p>	<p>National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; Archeological Resources Protection Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies</p>
<p>Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged.</p>	

Portions of the park have not been systematically surveyed or inventoried. Precise information about the location, characteristics, significance, and condition of the majority of archeological resources in the park is lacking, and impacts are difficult to measure. The National Park Service will take the following kinds of actions to meet legal and policy requirements related to archeological sites:

- Survey and inventory archeological resources and document their significance.
- Treat all archeological resources as eligible for listing on the National Register of Historic Places (NRHP), pending a formal determination by the National Park Service and the Arizona State Historic Preservation Officer (SHPO) as to their significance.
- Protect all archeological resources determined eligible for listing on, or listed on, the NRHP; if disturbance to such resources is unavoidable, conduct formal consultation with ACHP, SHPO, and affiliated American Indian tribes in accordance with the National Historic Preservation Act.

Historic Properties

Current laws and policies require that the following conditions be achieved in the park for historic properties (e.g., buildings, structures, roads, trails, cultural landscapes):

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Desired Condition	Source
<p>Historic properties are inventoried and their significance and integrity are evaluated under National Register criteria.</p> <p>The qualities that contribute to the eligibility for listing or listing of historic properties on the NRHP are protected in accordance with the Secretary of the Interior's Standards (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable).</p>	<p>National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies</p>

Many of the historic properties in the park exhibit various stages of deterioration owing to a lack of systematic preservation maintenance. A study of planning and architecture of the NPS Mission 66 program is under way. The study will provide the park with baseline data necessary for the long- term preservation of these resources.

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to historic properties:

- Complete a survey, inventory, and evaluation of historic properties under National Register criteria.
- Complete a survey, inventory, and evaluation of cultural landscapes.
- Submit inventory/evaluation results to SHPO with recommendations for eligibility to the National Register.
- Determine the appropriate level of preservation for each historic property formally determined to be eligible for listing, or listed on, the National Register (subject to the Secretary of the Interior's Standards).
- Implement and maintain the appropriate level of preservation for such properties.
- Analyze the design elements (e.g., materials, colors, shape, massing, scale, architectural details, site details) of historic structures and cultural landscapes in the monument (e.g., buildings, bridges, trails, roads and intersections, curbing, signs, picnic tables) to guide rehabilitation and maintenance of sites and structures.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

Desired Condition	Source
Anticipated impacts to Indian trust resources are addressed in environmental documents.	Secretarial Order 3175; NPS Management Policies

Although there are no Indian trust resources in Walnut Canyon, resources important to Indian tribes were identified during the scoping process by the tribes themselves, and that information was carefully incorporated into the design of alternatives so that these resources would be protected under any alternative considered.

Ethnographic Resources

Certain contemporary American Indian and other communities are permitted by law, regulation, or policy to pursue customary religious, subsistence, and other cultural uses of park resources with which they are traditionally associated. The National Park Service plans and executes programs in ways that safeguard cultural and natural resources while reflecting informed concern for the contemporary peoples and cultures traditionally associated with those resources.

Desired Condition	Source
<p>Ethnographic information will be collected through collaborative research that recognizes the sensitive nature of such information.</p> <p>All agencies shall accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of these sacred sites.</p> <p>The National Park Service acknowledges that American Indian tribes, including Native Alaskans, treat specific places containing certain natural and cultural resources as sacred places having established religious meaning and as locales of private ceremonial activities. Consistent with E.O. 13007, the Service will, to the extent practicable, accommodate access to and ceremonial use of Indian sacred sites by religious practitioners from recognized American Indian and Alaska Native tribes, and avoid adversely affecting the physical integrity of such sacred sites.</p> <p>Other federal agencies, state and local governments, potentially affected American Indian and other communities, interest groups, State Historic Preservation Officer, and the Advisory Council on Historic Preservation will be given opportunities to become informed about and comment on anticipated NPS actions at the earliest practicable time.</p> <p>All agencies shall consult with tribal governments prior to taking actions that affect federally recognized tribal governments. These consultations are to be open and candid so that all interested</p>	<p>NPS Management Policies</p> <p>Executive Order 13007 on American Indian Sacred Sites</p> <p>NPS Management Policies, E.O. 13007 on American Indian Sacred Sites</p> <p>National Historic Preservation Act; Programmatic Memorandum of Agreement among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); Executive Order 11593; American Indian Religious Freedom Act, American Indian Graves Protection and Repatriation Act, Executive Order 13007 on American Indian Sacred Sites; Presidential Memorandum of April 29, 1994, on Government-to-Government Relations with Tribal Governments; NPS Management Policies</p> <p>American Indian Religious Freedom Act; Presidential Memorandum of April 29, 1994, on Government-to-Government Relations with Tribal Governments; NPS Management Policies</p>

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Desired Condition	Source
<p>parties may evaluate for themselves the potential impact of relevant proposals. Parks will regularly consult with traditionally associated American Indians regarding planning, management, and operational decisions that affect subsistence activities, sacred materials or places, or other ethnographic resources with which they are historically associated.</p> <p>Certain research data may be withheld from public disclosure to protect sensitive or confidential information about archeological, historic, or other NPS resources when doing so would be consistent with FOIA. In many circumstances, this will allow the NPS to withhold information about ethnographic resources.</p> <p>American Indians and other individuals and groups linked by ties of kinship or culture to ethnically identifiable human remains will be consulted when remains may be disturbed or are encountered on park lands.</p>	<p>NPS Management Policies</p> <p>NPS Management Policies; American Indian Grave Protection and Repatriation Act</p>

To accomplish these goals, NPS will do the following:

- Survey and inventory ethnographic resources and document their significance.
- Treat all ethnographic resources as eligible for listing on the National Register of Historic Places, pending a formal determination by NPS and Arizona SHPO as to their significance.
- Protect all ethnographic resources determined eligible for listing or listed on the NRHP; if disturbance to such resources is unavoidable, conduct formal consultation with ACHP and SHPO in accordance with the National Historic Preservation Act.
- Conduct regular consultations with affiliated tribes to continue to improve communications and resolve any problems or misunderstandings that occur.
- Continue to encourage the employment of American Indians on the park staff to improve

communications and working relationships and encourage cultural diversity in the workplace.

- Provide for access to and use of natural and cultural resources in parks and collections by American Indians that is consistent with park purposes, does not unreasonably interfere with American Indian use of traditional areas or sacred resources, and does not result in degradation of park resources. Through consultation, an agreement with tribes on access issues will be developed.

In addition, consultation with affiliated Indian tribes was conducted throughout the course of the planning process. Tribes were funded to identify ethnographic resources within the three Flagstaff Area monuments, and this information was considered in developing alternatives.

Collections

Current laws and policies require that the following conditions be achieved in the park for museum collections:

Desired Condition	Source
All museum objects and manuscripts are identified and inventoried, and their significance is determined and documented.	National Historic Preservation Act; American Indian Religious Freedom Act; Archeological and Historic Preservation Act; Archeological Resources Protection Act; American Indian Graves Protection and Repatriation Act; NPS Management Policies
The qualities that contribute to the significance of collections are protected in accordance with established standards.	

The Flagstaff Area curatorial/museum collections are at risk. Improper storage and lack of adequate security and fire protection systems at facilities that house the collections threaten their safety and integrity. Significant portions of the archeological and historical collections remain uncataloged, and the collections continue to be scattered throughout various facilities.

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to collections:

- Construct and staff an approved curatorial facility to house the Flagstaff Area collections.
- Accession and catalog all park museum collections in accordance with standards in the NPS Museum Handbook. All cataloging information

will be made accessible in the Automated National Catalog System.

- Ensure objects are housed in proper storage. Ensure that museum collections not housed in NPS repositories are preserved, protected, and documented, according to National Park Service standards.
- Inventory and catalog all park museum collections in accordance with standards in the NPS Museum Handbook.
- Develop a collection management program according to NPS standards to guide protection, conservation, and use of museum objects.
- Implement the collection management program.

Natural Resource Management Requirements

Air Quality

Wupatki is a class II air quality area. Current laws and policies require that the following conditions be achieved in the monument for air quality:

Desired Condition	Source
Air quality in the monuments meets national ambient air quality standards (NAAQS) for specified pollutants.	Clean Air Act; NPS Management Policies
Park activities do not contribute to deterioration in air quality.	Clean Air Act; NPS Management Policies

Overall, the regional air quality is good. Air flows generally down and away from the adjacent San Francisco Peaks and visible pollutants generally do not accumulate within Walnut Canyon. The NPS has very little direct control over air quality within the airshed encompassing the monument. At times, regional haze generated from coal-fired power generating stations affects Flagstaff and Walnut Canyon, which is in

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the same airshed as Grand Canyon National Park. The NPS cooperates with the Arizona Department of Environmental Quality (ADEQ) and the Environmental Protection Agency to monitor ozone concentrations at Walnut Canyon between April and October every year. Current results show some elevation of ozone levels (ca. 60 ppb) during the summer months prior to the onset of the monsoon season in July. In addition, the NPS remains concerned that seasonal air temperature "inversion" events trap wood-burning stove smoke and other air pollutants near the surface around Flagstaff and locally impairs visibility within Walnut Canyon. The severity of these events would be expected to increase as the Flagstaff population increases and the city encroaches upon the monument boundary.

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to air quality:

- Participate in regional air pollution control plans and regulations and review of permit applications for major new air pollution sources.
- Augment local air quality monitoring programs by establishing long-term monitoring stations for visibility impairment at Walnut Canyon and continue monitoring ozone at monument. Monitoring will be conducted in conjunction with regional air quality agencies.
- Conduct park operations in compliance with federal, state, and local air quality regulations.

Water Resources

Current laws and policies require that the following conditions be achieved in the monument for water resources:

Desired Condition	Source
The Service will perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems.	Clean Water Act; Executive order 11514; NPS Management Policies
The Service will determine the quality of park surface and groundwater resources and avoid, whenever possible, the pollution of park waters by human activities occurring within and outside of parks.	Clean Water Act; Executive Order 12088; NPS Management Policies
Natural floodplain values are preserved or restored.	Executive Order 11988; Rivers and Harbors Act; Clean Water Act; NPS Management Policies
The natural and beneficial values of wetlands are preserved and enhanced.	Executive Order 11990; Rivers and Harbors Act; Clean Water Act; NPS Management Policies

The watershed and riparian resources of Walnut Canyon are being altered by upstream impoundments at Upper and Lower Lake Mary. In 2001 the NPS and Department of Justice completed negotiating rights to use water in the Little Colorado River System resolving water rights issues for Walnut Canyon National Monument. A number of entities were involved including the city of Flagstaff and the U.S. Forest Service.

As part of the general water rights agreement the National Park Service will take the following kinds of actions to meet legal and policy requirements related to water resources to resolve water rights issues for Walnut Canyon National Monument:

- Apply best management practices (BMP) to all pollution-generating activities and facilities in the parks, such as NPS maintenance and storage facilities and parking areas; minimize use of pesticides, fertilizers, and other chemicals and manage them in keeping with NPS policy and federal regulations.
- Assess the impacts from the diversion of surface water from the Walnut Canyon watershed by the city of Flagstaff, and attempt to mitigate these impacts where feasible.
- Work cooperatively with the city of Flagstaff and the U.S. Forest Service to evaluate methods that may increase the likelihood of flood flows and improve the inner-canyon environment in Walnut Canyon National Monument.
- Promote greater public understanding of water resource issues and encourage support for mitigating impacts in the Walnut Canyon watershed.

Geologic Resources

Current laws and policies require that the following conditions be achieved in the park for geologic resources:

Desired Condition	Source
Natural soil resources and processes function in as natural condition as possible, except where special management considerations are allowable under policy (areas of special management considerations will be determined through management zoning decisions in the GMP).	Monuments' enabling legislation; NPS Management Policies

Some areas within Walnut Canyon National Monument are receiving heavy visitor use, which is causing local soil compaction, loss

of vegetative cover, and erosion. This is particularly evident in steep terrain or improperly designed and maintained trails.

The National Park Service will take the following kinds of actions to comply with legal and policy requirements related to soils:

- Identify areas of Walnut Canyon where current human activities and modern developments are accelerating soil loss and causing erosion problems; take actions appropriate to the management zone to deter resource degradation and restore soil formation processes.

Species of Special Concern

Current laws and policies require that the following conditions be achieved for species of special concern in the park:

Desired Condition	Source
Federal- and state-listed threatened and endangered species and their habitats are sustained. Populations of native plant and animal species function in as natural a condition as possible except where special management considerations are warranted. (Areas with special management considerations will be determined through management zoning decisions in the GMP.)	Endangered Species Act; NPS Management Policies Monuments' enabling legislation; NPS Management Policies
The Service will strive to restore extirpated native plant and animal species to parks when specific criteria are met.	Monuments' enabling legislation; NPS Management Policies
Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken wherever such species threaten park resources or	NPS Management Policies; Executive Order 13112, Invasive Species

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Desired Condition	Source
public health and when control is prudent and feasible.	

Many natural areas support populations of species that are sensitive to human disturbance and development. Preserving the prehistoric landscape of Walnut Canyon also provides a unique refuge for certain species that are sensitive to other land uses.

Some species are in serious decline throughout their range and at risk of becoming extinct. These and their habitats are protected by law. Bald eagles, listed as threatened under the Endangered Species Act, routinely spend the winter in the area, and are occasionally observed perching in dead tree snags and feeding on elk carrion within the monument. Walnut Canyon also harbors nesting pairs of Mexican spotted owls, listed as threatened under the Endangered Species Act, and the U.S. Fish and Wildlife Service recently designated the entire monument as critical habitat for the Mexican spotted owl. The NPS must ensure that management of the monument does not adversely affect these species nor degrade their habitat.

A few unique and rare plant species also inhabit the monument. Rare plant populations often occur in very localized areas, so facilities and visitor use areas need to be carefully sited. Heavy foot traffic and off- trail activity can directly impact understory plants through trampling and soil compaction. Certain species may be subject to collection for cultural reasons, and better information on them is needed to ensure that populations remain stable.

Because Walnut Canyon is relatively small and narrow, wildlife use is affected by human development and activities along the canyon rim. Roads and developed areas act as movement barriers between natural areas. Some animals readily adapt to human activities, but habitat use by many others

may be disrupted by traffic, human presence, and elevated noise. A wide range of animals perceive humans as predators, and chance encounters along trails and in backcountry areas elicit a flight response which can be very stressful to animals.

Most wildlife species of concern within Walnut Canyon avoid human developments, and are apprehensive of high levels of human activity and associated noise. New facilities and visitor activities need to be carefully planned to minimize effects on sensitive wildlife. Resource management activities, such as archeological site preservation, environmental monitoring, scientific research, and habitat restoration projects may also occur in sensitive wildlife habitats, and need to be carefully implemented.

Roads, trails, and disturbed areas function as corridors for invasive species to move into the monument. A few species of nonnative, invasive plants have become established throughout Walnut Canyon. Given time, aggressive "exotic" plant populations can greatly expand, altering natural vegetation, displacing rarer native plants, eliminating native forage and cover for animals, and changing the original scenic character. These effects are already apparent in some areas of the monument and are expected to worsen substantially if left unmanaged. A sustained effort is needed to control these threats to native vegetation and wildlife habitats.

The National Park Service will take the following kinds of actions to comply with legal and policy requirements related to native species and to manage the park "in as natural a condition as possible":

- Inventory and catalog the plants and animals occurring in the monument.
- Regularly monitor the distribution and status of selected species that are (1) indicators of healthy ecosystem function and inherent biodiversity, (2)

rare or protected, (3) nonnative, and (4) native species capable of creating resource problems (e.g., overpopulation may result in undue competition or alter available habitat for other species).

- Nurture research that contributes relevant knowledge for conserving native species and ecosystem processes.
- Restore species populations and their habitats where feasible; in particular, protect and restore natural riparian habitat in Walnut Canyon.
- Manage native species in management zones designated for historic scene, active recreation, operations, or other prescribed uses; plantings of nonnative species in such zones would follow NPS policies (e.g., limited use of noninvasive plants only where justified by historic scene or operational needs).
- Control or eliminate nonnative invasive plants and animals where there is a reasonable expectation of success and sustainability; control efforts would be prioritized in order of:
 - threat to visitor health or safety
 - threat to legally protected or uncommon native species and habitats
 - threat to scenic and aesthetic quality
 - threat to common native species and habitats
- Manage diseases and pests in similar priority order to those listed above for nonnative species.
- Educate visitors and neighbors on threats to native species and ways to conserve these species.
- Cooperate with U. S. Fish and Wildlife Service and the U.S. Forest Service to implement the Mexican Spotted Owl Recovery Plan and conserve designated critical habitat.

Wildland Fire

Current laws and policies require that the following conditions be achieved regarding wildland fire in the park:

Desired Condition	Source
The natural role of fire is recognized in fire-adapted ecosystems. Park fire management programs are designed to meet park resource management objectives while ensuring that firefighter and public safety are not compromised. All wildland fires are effectively managed through application of the appropriate strategic and tactical management options.	NPS Management Policies, National Fire Management Plan

The NPS has prepared a new fire management plan (FMP) and environmental assessment for the monument. The plan identifies the appropriate strategies for suppressing wildfires. Aggressive suppression is proposed when human life, NPS facilities, property improvements, and adjacent lands are threatened.

The NPS has two agreements with neighboring fire protection agencies to efficiently share local personnel, equipment, and funds for fire emergency response. The Joint Powers Agreement provides for the "nearest available resource" to respond to fire emergencies on each participant's jurisdiction and to recoup costs associated with such actions. The structural fire protection agreement with the City of Flagstaff allows the city fire department to extend fire protection beyond the city limits to the facilities at Walnut Canyon. In the event a large, regional fire should occur, the monument would participate in an appropriate response coordinated by

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Flagstaff Zone Dispatch and the Southwest Interagency Coordination Center.

Within the monument, approximately 1,200 acres are dominated by ponderosa pine stands. Pre- settlement forest stand reconstruction research reveals the level rim terraces surrounding Walnut Canyon used to have far fewer but much larger ponderosa pines. Studies of fire- scarred trees document that localized fires used to burn through the forest floor every 4 to 8 years, thinning tree seedlings and saplings, reducing competition between the large overstory trees, and presumably favoring good grass and diverse wildflower cover between the trees.

Since 1987, the NPS has implemented a limited prescribed fire program to restore fire to the rim terrace ponderosa stands. The managed use of fire is also recommended in the Recovery Plan for the Mexican spotted owl to reduce the threat of catastrophic wildfire and maintain quality habitat for prey species. The canyon rim areas remain heavily stocked with young trees and accumulated woody fuels, and may be prone to moderately hot fires with harsh effects on the local ecosystem. The new FMP for the monument proposes to continue managing the ponderosa pine stands with manual fuels thinning and prescribed fire, identifies the resource management objectives for these activities, and incorporates measures to minimize impacts to sensitive cultural and natural resources within and nearby the monument.

The Park Service will take the following kinds of actions to comply with legal and policy requirements related to fire management:

- Suppress all unwanted wildfires as quickly as possible.
- Ensure fire management activities are implemented with minimal effects on sensitive cultural and natural resources.

- Use the results from vegetation and fire history studies to establish desired vegetation condition and resource management objectives for prescribed fires.
- Implement a fire management program which adheres to Mexican spotted owl protection and habitat management requirements in the Mexican spotted owl Recovery Plan and Critical Habitat Designation Rule.
- Ensure management-ignited fires comply with Arizona Department of Environmental Quality air quality regulations.

Night Sky/Lightscape Management

The monument's night skies are features that contribute to the visitor experience.

Desired Condition	Source
<p>The Service will preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light. Recognizing the roles that light and dark periods play in natural resource processes and the evolution of species, the Service will protect natural darkness and other components of the natural lightscape in parks. To prevent the loss of dark conditions and of natural night skies, the Service will seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the night scene of the ecosystems of parks.</p>	<p>NPS Management Policies</p>

The National Park Service will take the following kinds of actions to comply with this policy:

- Monument staff will work with local communities and other agencies to encourage protection of the night skies.
- Monument staff will evaluate impacts on the night skies caused by facilities within the monument. If light sources within the monument are determined to be affecting night skies, monument staff will study alternatives, such as shielding lights, changing lamp types, or eliminating unnecessary sources.

Natural Soundscapes

An important part of the NPS mission is to preserve or restore the natural soundscapes associated with national parks. The sounds of nature are among the intrinsic elements that combine to form the environment of our national parks. The natural ambient soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. Natural sounds are slowly and inexorably disappearing from most NPS units.

Desired Condition	Source
The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks. The Service will restore degraded soundscapes to the natural condition wherever possible and will protect natural soundscapes from degradation due to noise (undesirable human-caused sound). Using appropriate management planning, superintendents will identify	NPS Management Policies

Desired Condition	Source
what levels of human-caused sound can be accepted within the management purposes of parks. The frequencies, magnitudes, and durations of human-caused sound considered acceptable will vary throughout the park, being generally greater in developed areas and generally lesser in undeveloped areas. In and adjacent to parks, the Service will monitor human activities that generate noise that adversely affects park soundscapes, including noise caused by mechanical or electronic devices. The Service will take action to prevent or minimize all noise that, through frequency, magnitude, or duration, adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified as being acceptable to, or appropriate for, visitor uses at the sites being monitored.	

The Park Service will take the following kinds of actions to comply with this policy:

- Activities causing excessive or unnecessary unnatural sounds in and adjacent to parks, including low-elevation aircraft overflights, will be monitored, and action will be taken to prevent or minimize unnatural sounds that adversely affect park resources or values or visitors' enjoyment of them.
- NPS will work with the Federal Aviation Administration (FAA), tour operators, commercial businesses, and general aviation interests to encourage aircraft to fly outside of the monument, especially for those flights where the presence of the

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monument is incidental to the purpose of the flight (i.e., transit between two points). Actions that might be considered to encourage pilots to fly outside the monument include identifying the monument on route maps as a noise-sensitive area, educating pilots about the reasons for keeping a distance from the park, and encouraging pilots to fly in compliance with FAA regulations and advisory guidance, in a manner that minimizes noise and other impacts.

- Monument staff will continue to require tour bus companies to comply with regulations that reduce noise levels (e.g., turning off engines when buses are parked).
- Noise generated by NPS management activities will be minimized by strictly regulating administrative functions such as aircraft use and use of motorized equipment. Noise will be a consideration in the procurement and use of equipment by park staff.

Visitor Experience and Park Use Requirements

Current laws and policies require that the following conditions be achieved in the parks regarding visitor experience and park use:

Desired Condition	Source
Visitor and employee safety and health are protected.	NPS Management Policies
Visitors understand and appreciate park values and resources and have the information necessary to adapt to park environments; visitors have opportunities to enjoy the parks in ways that leave park resources unimpaired for future generations.	NPS Organic Act; Monuments' enabling legislation; NPS Management Policies
Park recreational uses are	NPS Organic Act;

Desired Condition	Source
promoted and regulated, and basic visitor needs are met in keeping with park purposes.	Monuments' enabling legislation; Title 36 of the Code of Federal Regulations; NPS Management Policies
All reasonable efforts will be made to make NPS facilities, programs, and services accessible to and usable by all people, including those with disabilities.	
Americans with Disabilities Act; Architectural Barriers Act; Rehabilitation Act; NPS Management Policies	
Visitors who use federal facilities and services for outdoor recreation may be required to pay a greater share of the cost of providing those opportunities than the population as a whole.	NPS Management Policies; 1998 Executive Summary to Congress, Recreational Fee Demonstration Program, Progress Report to Congress, Volume I--Overview and Summary (U.S. Department of the Interior, National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management; U.S. Department of Agriculture, Forest Service)
The park has identified implementation commitments for visitor carrying capacities for all areas of the unit.	1978 National Parks and Recreation Act (P.L. 95-625); NPS Management Policies

These laws, regulations, and policies leave considerable room for judgment regarding the best mix of types and levels of visitor-

use activities, programs, and facilities. For this reason, most decisions related to visitor experience and use are addressed in the Decide What Might Be Achieved section and in the alternatives. However, the authority to charge fees is dictated by law and is therefore the same for all alternatives.

The Land and Water Conservation Fund Act (16 USC 4601 et seq.) allows NPS to collect recreation fees of the appropriate type for its parks, facilities, and programs. Fees are to be reasonable and are determined in accordance with the criteria and procedures contained in the Land and Water Conservation Fund Act and regulations in 36 CFR 71. Fees collected under this authority are returned to the U.S. Treasury. Fees are also being collected for special park uses under 16 U.S.C. 3(a) and 31 U.S.C. 3701, in accordance with OMB Circular A- 25. Under this authority, NPS recovers the costs incurred for providing special park uses, but returns to the U.S. Treasury any revenues in excess of costs.

Congress authorized the recreational fee demonstration program to begin on October 1, 1995, and to end on September 30, 2002. The program authorizes NPS and other agencies to implement and test new fees. The program allows the participating agencies to retain all of the demonstration project revenues and to retain at least 80 percent of the revenues at the sites where they are collected. These revenues yield substantial benefits because they provide on- the- ground improvements at local recreation sites. For NPS, the majority of new recreation fee revenues are dedicated to reducing identified backlogged maintenance, infrastructure, and resource management needs. Some of the demonstration fee revenues are reinvested into infrastructure and new collection methodologies to prepare additional areas to collect fees and provide for overall collection efficiency across NPS.

Regulations governing visitor use and behavior in units of the National Park System are contained in Title 36 of the Code of Federal Regulations and Superintendent's Compendium. These regulations have force of law and address a number of use limitations, such as limits on commercial activities.

Under the 1978 National Parks and Recreation Act (P.L. 95- 625), NPS is required to address the issue of carrying capacity in its general management plans. The concept of carrying capacity is intended to safeguard the quality of park resources and visitor experiences. Identifying desired resource conditions and visitor experience by zone is part of general management planning. At this level of decision making, the desired resource conditions and experiences describe carrying capacity in qualitative terms. These qualitative terms are then translated into quantitative standards over time during implementation planning.

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to visitor experience and park use:

- Provide opportunities for visitors to understand, appreciate, and enjoy the park (management directions are explored in the alternatives within this broad policy).
- Continue to enforce the regulations in 36 CFR.
- Ensure that all park programs and facilities are accessible to the extent feasible.
- Complete a carrying capacity implementation plan, which will succeed this GMP. This plan will identify indicators and standards, develop a monitoring strategy, and identify management actions needed to address conditions when standards are reached or exceeded.

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- Implement a carrying capacity monitoring program.
- Take management action as necessary to keep resource and visitor experience conditions within established standards.

Relations with Park Neighbors and Other Agencies

Walnut Canyon National Monument is managed as part of a greater ecological, social, economic, and cultural system. Current policy requires the following:

Desired Condition	Source
<p>Public participation in planning and decision making will ensure that the Park Service fully understands and considers the public's interests in the parks, which are part of their national heritage, cultural traditions, and community surroundings. The Service will actively seek out and consult with existing and potential visitors, neighbors, people with traditional cultural ties to park lands, scientists and scholars, concessioners, cooperating associations, gateway communities, other partners, and government agencies. The Service will work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems.</p> <p>In the spirit of partnership, the Service will also seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by section 802 of</p>	<p>NPS Management Policies</p>

Desired Condition	Source
<p>the National Parks Omnibus Management Act of 1998 (16 USC 1a-2l).</p>	

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to park neighbors:

- Continue to establish and foster partnerships with public and private organizations to achieve the purposes and mission of the monument. Partnerships will be sought for resource protection, research, education, and visitor enjoyment purposes.

Park staff will keep landowners, land managers, local governments, and the general public informed about park management activities. Periodic consultations will occur with landowners and communities affected by park visitors and management actions. The National Park Service will work closely with local, state, and federal agencies and tribal governments whose programs affect, or are affected by, activities in the monument. Monument staff will continue their regular consultations with the Arizona State Historic Preservation Office, the Arizona State Game and Fish Department, and Indian tribes. In particular, NPS will maintain a close working relationship with the U.S. Forest Service to meet mutual management needs with staff from the Peaks and Mormon Lake Ranger Districts on the Coconino National Forest. Park staff will continue to meet as needed with staff from Northern Arizona University (NAU) Departments of Anthropology, Geography, Geology, and School of Forestry; Museum of Northern Arizona; U.S. Geological Survey (USGS); USGS Biological Resources Division, Colorado Plateau Field Station, NAU; Coconino Plateau Natural Reserve Lands (CPNRL, formerly Babbitt Ranches);

city of Flagstaff; Arizona State Lands Department; Coconino County; Natural Resources Conservation Services; and U.S. Fish and Wildlife Service. Agencies that the monument staff periodically keep informed- depending on the issue- include Grand Canyon Trust, National Parks and Conservation Association, Nature Conservancy, Sierra Club, Friends of Walnut Canyon, and neighboring national parks.

- Monument staff will continue to participate in cooperative regional planning to ensure that the monuments are treated as issues of regional concern.

Sustainable Design/Development

Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short- and long- term environmental impacts of development and other activities through resource conservation, recycling, waste minimization, and the use of energy efficient and ecologically responsible materials and techniques.

Desired Condition	Source
Facilities are integrated into the park landscape and environs with sustainable designs and systems to minimize environmental impact. Development does not compete with or dominate park features, or interfere with natural processes, such as the seasonal migration of wildlife or hydrologic activity associated with wetlands. Any facility development, whether it be a new building, a renovation, or an	NPS Management Policies

Desired Condition	Source
adaptive reuse of an existing facility, includes improvements in energy efficiency and reduction in "greenhouse gas" emissions for both the building envelope and the mechanical systems that support the facility. Maximum energy efficiency is achieved using solar thermal and photovoltaic applications, appropriate insulation and glazing strategies, energy-efficient lighting and appliances, and renewable energy technologies. Energy-efficient construction projects are used as an educational opportunity for the visiting public.	

The NPS Guiding Principles of Sustainable Design (1993) directs NPS management philosophy. It provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook articulates principles to be used in the design and management of tourist facilities that emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. Sustainability principles have been developed and are followed for interpretation, natural resources, cultural resources, site design, building design, energy management, water supply, waste prevention, and facility maintenance and operations. The Park Service also reduces energy costs, eliminates waste, and conserves energy resources by using energy- efficient and cost- effective technology. Energy efficiency is incorporated into the decision- making process during the design and acquisition of

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buildings, facilities, and transportation systems that emphasize the use of renewable energy sources.

In addition to abiding with these principles, the following will also be accomplished:

- Park staff will work with appropriate experts to make the monument's facilities and programs sustainable. Value analysis and value engineering, including life cycle cost analysis, will be performed to examine the energy, environmental, and economic implications of proposed park developments.
- The park staff will support and encourage suppliers, permittees, and contractors to follow sustainable practices.
- Park interpretive programs will address sustainable park and nonpark practices.

Special Use Management Requirements

Land Protection

One private inholding exists in Walnut Canyon National Monument, a tract of 237.84 acres owned by Warren and Joan Smith of Flagstaff, Arizona. This tract is the site of the Santa Fe Dam, a reservoir built by the Santa Fe Railroad Company before the turn of the century. Included in the 290.84 acres is a 50-foot strip of land in the canyon bottom that provided access from the main railroad line to the dam and comprises about 14 acres. The dam is listed on the National Register of Historic Places. The private parcel of land has been unused since the monument was established.

Any economic values associated with the tract would be greatly enhanced through the improvement of access and development of a source of water. The current landowner is planning some improvements to facilitate restoring the historic dam and reestablishing a reservoir. These

improvements may include a road and water well. With improved access and available water, this tract will have development potential as residential and/or commercial property. Although much of the tract is steep canyon slope or canyon bottom, the rims of the canyon offer acceptable building sites.

A *Land Protection Plan*, prepared for Walnut Canyon in March 1990, identified fee acquisition of the inholding as the preferred method of protection. It found that there are no private uses of the inholding that would be compatible with park management objectives (identified in that plan as preservation of the historic scene and natural resource values). The park mission goal applicable to land protection is "Natural and cultural resources and associated values within the three Flagstaff Area monuments are protected and maintained in good condition and managed within their broader ecosystem and cultural contexts." The landowner has expressed willingness to consider NPS acquisition through exchange, or purchase by the National Park Service. The NPS is currently working towards this goal, but water rights issues and archeological resource values are complicating the negotiations. Until such time that the inholding can be purchased, the National Park Service recognizes that this inholding is private land and respects the rights of this landowner.

Desired Condition	Source
Land protection plans are developed and periodically reviewed and updated for each park containing nonfederal lands or interests that may be subject to acquisition. Land acquisition is guided by a park's land protection plan. The plans identify the alternative	NPS Management Policies; NPS Land Acquisition Policy Implementation Guideline (NPS-25); the Department of

Desired Condition	Source
methods that will provide for the protection of resources, for visitor use, and for development; identify the minimum interests necessary for those purposes; and establish priorities for acquisition of land or interests in land.	the Interior's "Policy for the Federal Portion of the Land and Water Conservation Fund" (FR 47:19784); the NPS "Land Protection Plan Instructions" (FR 48:21121); the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 USC 4601 et seq.); and Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights"

Desired Condition	Source
park's mission and resources. No new nonconforming use or rights-of-way will be permitted through the parks without specific statutory authority and approval by the director of the National Park Service or his representative and only if there is no practicable alternative to such use of NPS lands.	

The Telecommunications Act of 1996 directs all federal agencies to assist in the national goal of achieving a seamless telecommunications system throughout the United States by accommodating requests by telecommunication companies for the use of property, rights- of- way, and easements to the extent allowable under each agency's mission. Unlike with other nonconforming uses, the National Park Service is legally obligated to permit telecommunication infrastructure within the parks if such facilities can be structured to avoid interference with park purposes.

The National Park Service will take the following kinds of actions to meet legal and policy requirements related to special uses of park lands:

- Determine appropriate locations and stipulations before permitting telecommunication infrastructure on NPS lands in order to ensure the protection of park resources and quality visitor experiences while endeavoring to respond positively. Applications, sites, and stipulations will be based on the management zoning scheme determined by the GMP.

Rights-of-Way and Telecommunication Infrastructure

Current laws and policies require that the following conditions be achieved in the park:

Desired Condition	Source
Park resources or public enjoyment of the parks are not denigrated by nonconforming uses.	Telecommunications Act; 16 USC 5; 16 USC 79; 23 USC 317; 36 CFR 14; NPS Management Policies; Director's Order 53A, Wireless Telecommunications
Telecommunication structures are permitted in the parks to the extent that they do not jeopardize the	

Description of Scoping Process NOTICES, NEWSLETTERS, AND MEETINGS

The notice of intent (NOI) to prepare an environmental impact statement was published in the Federal Register May 19, 1997 (62 FR 27272). The NOI indicated availability of the first newsletter, from which comments were accepted until June 30, 1997. The first newsletter (April 1997) described purpose and significance statements for all three Flagstaff Area parks and identified preliminary issues. A mail-back comment form was included, asking the public if they agreed with the material in the newsletter, if they had recommendations on improvement, and if there were issues or problems that had been missed. Comments from the newsletter were collated and presented at an open house August 20, 1997, in Flagstaff. Twenty-nine comment forms were returned by mail. Additional comments were taken at the open house. Primary issues added by the public included funding, access, and the planning process.

The second newsletter, released in February 1998, detailed public response to the first newsletter, described the final purpose and significance statements, and explained the preliminary range of management zones. Another mail-back comment form was included, which asked the public if the management zones included the experiences they felt were important and if they recommended any changes. Nine responses were received.

A third newsletter, issued in November 1998, combined and organized comments received from newsletters #1 and #2 into decision points and related problems to be solved by alternatives in the draft environmental impact statement. This newsletter also introduced draft alternatives for the three parks and two alternatives proposing a combination of Sunset Crater

and Wupatki. Again, a mail-back form was included. This newsletter was followed by another public open house, held in Flagstaff, December 3, 1998, and attended by about 60 people.

The third newsletter and the open house that followed elicited a large response compared with the previous newsletters. One hundred and twenty-eight individual responses were received, along with a petition that had 1,200 signatures and 541 copies of a form letter. The issue generating the petition and form letter was the proposal to expand the boundaries at Sunset Crater and Wupatki and eliminate the use of off-highway vehicles. Other actions proposed in the alternatives (increased access, road closures, and road expansion) received small numbers of responses, relatively equal for and against.

The fourth newsletter, issued in May 1999, described the decision to prepare a plan concurrently with the Forest Service.

All newsletters were posted on the Internet on the National Park Service planning web page. All comments that were received through June 1999 were considered in this EIS.

A number of meetings were held with staff from the Forest Service and Arizona Game and Fish Department to discuss impacts that the alternatives might have on adjacent recreational activities and impacts to wildlife and their movement corridors and to try to ensure that NPS planning would be in support/harmony with other agencies' planning efforts. Many of the conversations focused on joint or comanagement of resources and visitor uses. A number of meetings were held with the affiliated tribes, including Havasupai Tribe, Hopi Tribe, Hualapai Tribe, Navajo Nation, San Juan Paiute Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai Apache Nation, Yavapai- Prescott Tribe, and Zuni Tribe. Meetings with the tribes were held to

determine traditional uses, desired continuing uses, ethnography information, sacred sites data, consultation protocol, and issues related to repatriation of human remains and artifacts.

TRIP FACT SHEETS

To determine if existing park visitors' needs were being met, trip fact sheets were set out in each of the three visitor centers. Visitors filled out the sheets voluntarily. The trip fact sheets were a one- page check- off that asked visitors where they were from, why they came to the park, how they preferred to learn about the park, and what they would take advantage of, if it were available. A total of 4,091 trip sheets, spanning a 15- month time frame, were collected and collated.

Responses were fairly consistent for the three monuments. The following five items were considered highly desirable by visitors to the three monuments:

- Want short and longer hiking trails.
- Want to be able to step off the trail for picture taking.
- Want self-guided activities.
- Want to learn by ranger programs.
- Want to learn by museum exhibits.

VISITOR USE STUDY

As a complement to the public meetings, newsletters, and trip fact sheets, a visitor use study was conducted to gather more in- depth information on visitors, their experience, behavior, and how behavior affects resources.

Approximately 1,200 mail- back questionnaires were distributed in conjunction with an on- site interview. A total of 885 questionnaires were returned- - 287 for Sunset Crater Volcano, 304 for Walnut Canyon, and 294 for Wupatki. The on- site survey repeated the questions asked in the trip fact sheets, whereas the mail-

back questionnaire provided more detailed information. The following information was asked:

- What sites did visitors visit, and how long did they stay at each site?
- In which activities did visitors participate?
- What problems did visitors encounter?
- What were visitors' feelings about seeing other visitors?
- What added to or detracted from their park experience?

Visitors to Walnut Canyon listed seeing archeological ruins, looking at the scenery, and having an adventure as the most important reasons for visiting. The things that bothered visitors included the climb up the stairs, safety concerns, and inconsiderate visitors. When asked about what they would like to see changed, most visitors responded, "nothing." Things that others did want changed included a trail to the canyon bottom, more trails and guided hikes, a reconstructed dwelling, and changes in the Island Trail, such as more railings, wider trails, a one- way trail, and water on the trail. Other visitors identified desired changes, including some type of "up" transportation and updated and expanded visitor center displays.

Decide What Might Be Achieved

ISSUE ANALYSIS AND CONCERNS

Many issues and concerns were identified by the park staff, other agencies, and the general public as part of the scoping for this general management plan. These issues and concerns were then categorized according to how they could be resolved. The list of things to be addressed in the general management plan will include major planning issues (decision points), the resources and values that could be at stake in choosing one course of action over

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another (impact topics), and the range of management prescriptions (management zones). These elements are described below. The impact topics are also addressed in the evaluation of alternatives in the Environmental Consequences section of this plan.

DECISION POINTS

Based on public comments and NPS concerns, there are four major points about which decisions must be made in this GMP. The considerations following each statement were actual scoping comments received.

1. We need to decide to what extent we can provide visitor access to cultural and natural resources without unacceptable impacts to those resources.

Considerations:

- Monitoring and protection of resources is difficult.
- Popular resources are trampled by visitors.
- Additional research is needed to understand the relationships between numbers of visitors and resource impacts.
- There is a need to understand tribal requirements for access to and use of resources without disruption by visitor use.
- Trail use often exceeds design capacity, causing safety and resource protection concerns (trails are subject to erosion and rockfalls).

2. Important park goals are to ensure adequate visitor orientation and education and to minimize use impacts. We need to decide whether to accomplish this by increasing facilities and services or by limiting entrance points and visitor circulation.

Considerations:

- Existing buildings do not meet current visitor or employee needs; visitation often exceeds visitor center and parking lot capacities.
- Visitors do not receive necessary information before they encounter sensitive resources.
- Resources are being lost because of vandalism and theft.
- Visitor centers and exhibits do not reflect current scientific thinking or relationships between sites and people.
- Some facilities are located in prime resource areas and may be causing undue impacts on those resources; other facilities are not sustainable or designed for the landscape.
- Existing staffing and budget levels limit visitor services.

3. We need to decide the extent to which park operations, visitor experiences, and resource protection can be integrated across the three Flagstaff Area parks or whether they need to be treated separately.

Considerations:

- There is redundancy and inefficiency in park facilities and infrastructure; much of the infrastructure is antiquated and inadequate.
- Park units and park operations are not consistently integrated and structured to address prioritized needs.
- Systems and programs do not ensure clear and effective communication among the staff or with visitors.
- Static funding and staffing levels require maximum use and efficiency of park facilities, infrastructure, and programs.

4. We need to determine to what extent we can protect park values through agreements and/or partnerships with park neighbors and inholders and/or boundary adjustments and land acquisition.

Considerations:

- Rapid regional growth and development adjacent to parks increase the potential for damage to resources, viewsheds, and visitor experience.
- Confusion sometimes arises from the presence of multiple agencies with common boundaries and/or resources but different management policies and visitor use regulations.
- There are land management, land trades, and "friendly condemnation" issues near park boundaries involving the state and the U.S. Forest Service.
- Strategies are needed for dealing with private land in the parks while preserving private property rights.

RESOURCES/VALUES AT STAKE IN THE PLANNING PROCESS

During scoping, the resources and values that could potentially be at stake in selecting various future directions for the parks were identified. Public and park staff input was considered. The following impact topics were derived from this scoping input for Walnut Canyon:

- Long-term integrity of archeological resources
 - Scientific integrity of cultural resources
- Historic character of built environment
 - Historic resources
 - Cultural landscapes
- Ethnographic Resources
 - Long-term scientific and traditional integrity of culturally sensitive areas

(shrines, gathering sites, landforms, resource collection areas, etc.)

- **Natural Systems and Processes**
 - Protecting plant species diversity and the locally rich assemblage of plant communities
 - Ensuring that Walnut Canyon continues to function as an important wildlife habitat area and movement corridor within the surrounding natural landscape
 - Maintaining natural geomorphic and soil formation processes
 - Restoring fire-adapted ponderosa pine stands above the canyon rim
 - Maintaining naturally functioning drainage systems within the side canyons
 - Maintaining the integrity of natural systems for ecological research
 - Excluding nonnative species
- **Threatened, Endangered, and Sensitive Species**
 - Protecting federally listed threatened and endangered species, "species of concern," and critical habitats, including the Mexican spotted owl
 - Conserving other sensitive plants, animals, and unique habitats identified during the scoping process
- **Wetlands, Floodplains, and Riparian Resources**
 - Preserving and restoring riparian vegetation and ephemeral pools along the Walnut Canyon floor
 - Protecting seeps and springs in the side canyons
 - Facility development and recreational impacts to the Walnut Canyon drainage system
 - Facility development and recreational activities in potential flashflood areas
- **Ability to experience park resources**
 - Access to park resources by the general public
 - Access to a full spectrum of park resources for visitors with disabilities

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Uncrowded visitor experiences
Personal freedom (inside and outside park boundaries)
Traditional employee/visitor experiences (interpretation through personal services, access to favorite sites)
Traditional recreational activities (biking, climbing, etc.)
Access to information provided by collections (ability to see the "real thing")
Minimally altered environment
Ability to experience scenic, recreational, and educational pursuits
Visibility of night skies
Natural soundscapes, ability to hear natural sounds
Ability of public to understand park resources
Visitor understanding of regional context

- Effects on park neighbors; local, state, and tribal land management plans; and land/resource managing agencies
 - Effects on neighbors' access and emergency response
 - Economic contribution of park to local economies
 - Access to culturally sensitive areas by traditional users
 - Traditional land uses external to boundary
 - Possible conflicts between the proposed action and local, state, or Indian tribal land use plans, policies, or controls for the area concerned
- Operational efficiency
 - Employee and visitor health and safety
 - Ability to enforce park regulations and protect park values
 - Staff
 - Facilities
 - Distance to work
 - Management of collections and other resources
 - Ease of communication
 - Utilities

Employee housing

TOPICS DISMISSED FROM FURTHER ANALYSIS

Socially or Economically Disadvantaged Populations

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low- Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low- income populations and communities. None of the alternatives considered would result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect adverse effects on any minority or low- income population or community. The impacts on the natural and physical environment that occur from any of the alternatives would not significantly and adversely affect any minority or low- income population or community. Although there are several Indian tribes nearby, a series of consultation meetings has resulted in alternatives carefully crafted to incorporate and resolve the tribal concerns identified. Therefore environmental justice was dismissed as an impact topic.

Prime and Unique Agricultural Lands

In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as a soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, none of the soils in the project area are

classified as prime or unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this document.

Air Quality

The President's Council on Environmental Quality guidelines for preparing environmental impact statements require the lead agency to analyze the impacts of the proposed action and alternatives on air quality. Under each of the proposed management alternatives for Walnut Canyon National Monument, visitor use and administrative operations would generate similar levels of air pollutant emissions from motor vehicles and motorized equipment, water and sewage treatment operations, propane and natural gas- fueled appliances, and wood- burning stoves used to heat employee residences. Some dust and fumes would be generated during the maintenance, improvement, construction, or removal of roads, trails, and other facilities. The NPS would follow established policy requiring the use of energy- efficient and environmentally friendly products and processes whenever possible. Although public visitation and motor vehicle use are expected to increase during the next 20 years, levels of vehicle exhaust are not expected to dramatically increase or significantly contribute to regional air pollutant loads. Air quality impacts from prescribed burning will be addressed in a forthcoming fire management plan and environmental assessment.

None of the identified air pollutant sources would generate enough quantities to require a discharge permit under U.S. Environmental Protection Agency and Arizona Department of Environmental Quality regulations. The impacts of these emissions are deemed to be negligible on the local environment and regional air quality for the proposed action and all

alternatives. Therefore, they are excluded from further environmental analysis.

Water quality

The President's Council on Environmental Quality guidelines for preparing environmental impact statements require the lead agency to analyze the impacts of the proposed action and alternatives on water quality. Impacts to ephemeral drainage systems, wetlands/floodplains, and riparian environments are assessed separately in the Environmental Consequences section. Under each of the proposed management alternatives for Walnut Canyon National Monument, visitor use and administrative operations would require similar amounts of drinking water and generate similar levels of water pollutants from road runoff, facility maintenance operations, and water and sewage treatment operations. All wastewater and sewage from the visitor center, employee housing, and toilets is treated and discharged to lined evaporative lagoons. None of the existing or proposed facilities would be located in the vicinity of regulated surface waters or aquifer recharge areas. The nearest reliable aquifer beneath these facilities is at least 1,500 feet deep. The NPS would follow established policy requiring the use of water- conserving technology and environmentally friendly products. Although public visitation and motor vehicle use are expected to increase during the next 20 years, the level of incidental hydrocarbon runoff from roads is not expected to dramatically increase or contaminate local waterways. For these reasons, the proposed action and all alternatives are deemed to have a negligible impact on the environment and water quality and this topic is excluded from further environmental analysis.

Geologic Resources

The President's Council on Environmental Quality guidelines for preparing environmental impact statements require

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the lead agency to analyze the impacts of the proposed action and alternatives on geologic resources. Impacts to soils, ephemeral drainage systems, and hydrogeology are assessed separately in the Environmental Consequences section. NPS national policy prohibits the surface mining of soil, gravel, cinder, or rock materials for any park operations purposes, including the construction of roads or facilities. Under any of the proposed management alternatives for Walnut Canyon National Monument, most modifications to access roads and facilities would be limited to existing disturbed areas and would not likely require blasting or other modification of bedrock geology. Walnut Canyon was carved by stream erosion through the Kaibab Limestone and Coconino Sandstone formations. Paleontological resources are exposed in the limestone walls of the canyon. These have been documented in studies and are primarily small mollusk, brachiopod, and bivalve fossils. While there are a few documented incidents of illegal removal of fossils, they are believed to receive adequate protection by the NPS and to have little market value. The potential impacts to surface geologic outcrops from road or facility construction, visitor activities, or NPS operations would be negligible. For these reasons, the proposed action and all alternatives are deemed to have a negligible impact upon geologic resources, and are excluded from further environmental analysis.

OUTSTANDING PARK VALUES AND RESOURCE CONCERNS

Walnut Canyon National Monument and the area immediately surrounding the Canyon National Monument. These original core values persist to the present day, and the archeological sites in the monument retain a high degree of integrity. Approximately 40 of the more than 240

monument contains hundreds of archeological sites dating mostly to the 11th, 12th, and early 13th centuries A.D. These sites and associated artifacts are the tangible remains of a prehistoric culture that flourished in the Flagstaff region from about A.D. 600 until 1400. Archeologists call this culture "Sinagua," in reference to the early Spanish name for this highland region, "Sierra Sinagua" (Mountain Range without Water). Scattered Sinagua families farmed the upland areas around Walnut Canyon for centuries, growing small gardens of corn, squash, and beans. Beginning in the late 1000s, however, the population grew significantly. By the mid- 1100s, many people had moved into limestone alcoves below the canyon rim, where they constructed substantial dwellings with locally available stone and clay. Growing crops at scattered plots in the surrounding forest, raising children, making stone tools and other implements, and following the ancient ceremonial cycles that had been passed down for generations, the Walnut Canyon community thrived for about 150 years. Today, Walnut Canyon preserves a portion of the once extensive Sinagua cultural landscape. Multiroom residential sites (both cliff dwellings and open- air pueblos), isolated field structures, "forts," quarries, agricultural fields, shrines, rock art, and other features are now protected within the monument.

The dense concentration of prehistoric ruins, their exceptional state of preservation, and their unusual and highly scenic setting in sheltered alcoves along the canyon walls, coupled with the threat of imminent destruction by commercial looters and misguided tourists, were key factors influencing the creation of Walnut archeological sites in the monument have been stabilized to some degree, but many retain substantial amounts of original masonry architecture and a more or less complete assemblage of artifacts.

The site density in the monument averages almost 100 sites per square mile, compared with typical densities of 40 sites per square mile in other areas of the ponderosa pine forest near Flagstaff. The high site density in Walnut Canyon reflects the area's biological richness in general. The canyon's natural abundance and diversity of plant and animal species provided a storehouse of resources that sustained the prehistoric inhabitants of Walnut Canyon.

Spanish explorers named the mountainous region around Flagstaff "Sierra Sinagua" for good reason. In a region renowned for its paucity of natural water sources, the deep pools and historically more reliable flows of Walnut Creek made this canyon singularly rare and valuable, even without the addition of its archeological treasures. The riparian values of Walnut Canyon have been severely altered, particularly by two upstream (Upper and Lower Lake Mary) dams. The downstream Santa Fe dam further affects the system, although to a much lesser degree. Collectively, these dams have greatly decreased seasonal water flows within the canyon, modified sediment transport, and decreased available moisture. These effects have combined to modify the natural distribution of native riparian species, including box elder, willows, cottonwoods, and Arizona walnut trees (for which the canyon was named). Nevertheless, the comparative abundance of moisture in the canyon from remaining springs and seeps, relative to the surrounding uplands, continues to sustain a highly diverse and unusually abundant mix of plant and animal species.

The varying exposures and elevations of Walnut Canyon, combined with seasonally abundant water compressed along a relatively narrow band within a larger expanse of ponderosa pine forest creates a natural biological "hot spot" - a concentrated area of biological productivity. Several different ecological

communities overlap within Walnut Canyon, mixing species that are usually separated by elevation and creating a diverse assortment of microhabitats. Today, Walnut Canyon supports a wide diversity of animals and plants, including important large ungulates such as antelope, deer, and elk, large predators such as black bear and mountain lion, numerous raptors, and spotted owls, and an unusual assortment of plants. Because of its geographic location, rugged landform, and directional orientation, Walnut Canyon also serves as an important wildlife movement corridor, linking the higher elevation forests around Lake Mary with the lower elevation pinyon and juniper woodlands to the east, as well as protecting strategic cross-canyon routes between Campbell Mesa and Anderson Mesa.

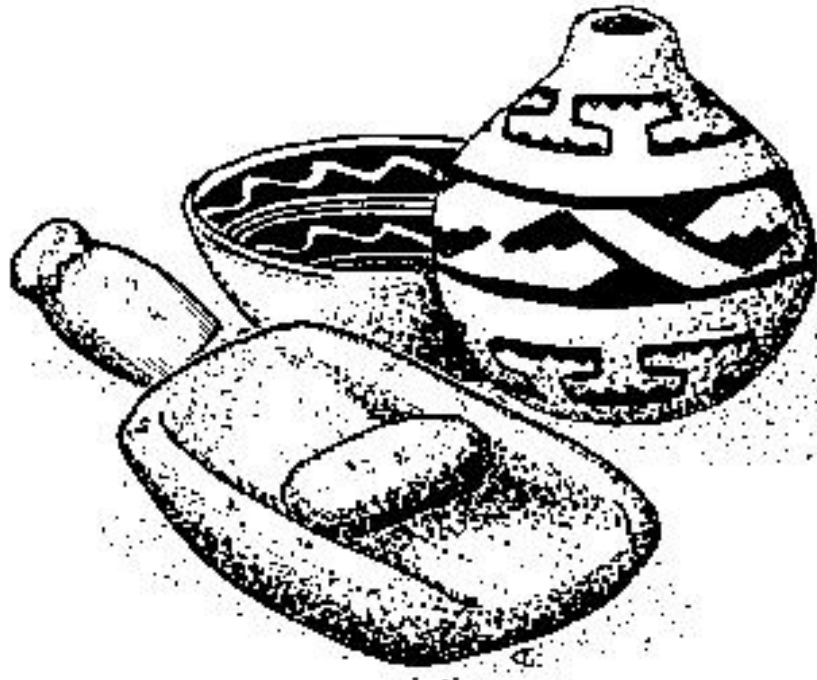
Walnut Canyon's ancient dwellings and rich assortment of plants and animals hold traditional cultural importance for several American Indian tribes in the area. Several Hopi clans maintain specific ancestral claims to the dwelling sites in Walnut Canyon. Certain Navajo and Apache clans claim affiliation to ancestral Pueblo sites in general. Numerous plant species were traditionally used by Hopis, Yavapais, Navajos, and Apache, and many of these plants continue to have importance for medicinal and ceremonial purposes. Today, several culturally important plant species are found in much greater abundance within the monument than anywhere outside of it.

The scenic qualities of Walnut Canyon cannot be divorced from other values; nevertheless, the stunning views provided by the canyon continue to have importance to visitors and local residents. For as long as Euro-American settlers have lived in the Flagstaff area, Walnut Canyon has been a scenic and recreational attraction for local residents and out-of-town visitors alike. This attraction continues to the present day.

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As Flagstaff continues to grow, the scenic and recreational value of Walnut Canyon as a relatively natural and undisturbed oasis on the edge of an urban setting will grow

accordingly. Integrating future plans for this area within the broader regional Flagstaff Open Space Greenway plan is key to ensuring its long-term preservation.



ALTERNATIVES

DEVELOPMENT OF ALTERNATIVES

Resource Analysis

As the first step in the alternatives development process, landscape units were plotted, sensitive resource areas were mapped, and existing visitor experiences (driving, hiking, viewing archeological sites) were identified. Natural and cultural resource inventories were evaluated. Visitor use statistics were gathered and studied. The planning team also discussed areas where visitors or park staff have noted problems in the past and sought the underlying reasons for those problems.

Landscape units plotted for Walnut Canyon included: reservoir, canyon bottom, shaded tributaries, promontories, inner canyon north, inner canyon south, inner canyon north with archeological concentrations, inner canyon south with archeological concentrations, forested rim north, north rim historical area, broad flat alluvium, forested rim south and chained areas.. The appropriateness of these landscape units for use and development was considered.

Information on the following issues/existing conditions and resources was overlaid to create maps highlighting areas that were particularly sensitive to human use: boundary/adjacent uses, visitor use, roads/trails/development, boundaries/fences, impact areas, ethnographic/sacred sites, threatened/endangered/endemic species/habitat, wetlands, soils/geologic features, sensitive cultural areas, pristine areas, and safety concerns. In meetings with the Forest Service, maps showing cultural resource information (traditional cultural properties, National Register of Historic

Places properties, collecting areas, inventoried archeological site densities, and historic uses), sensitive species, current rules and regulations, stakeholders, and experiences were prepared.

This analysis aided in the development and placement of management zones and facilities in different alternatives. Desirable resource conditions and visitor experiences for each zone were identified. This analysis and the sensitive areas maps were consulted when decisions were made about how to place zones and facilities in different alternatives. Other measures taken to check feasibility and determine potential impacts included field- checking alternative ideas and proposals and consulting with resource experts and other agencies. Input from newsletters and scoping was also used to draft alternatives. Input from visitor surveys provided a better understanding of what visitors value, what their expectations are, and what problems they experience.

The goal was to ensure that the draft alternatives did not include actions with unacceptable effects on park resources or visitors or actions with no public support. For example, spotted owl protected activity centers (PACs) were mapped and development was not considered in those areas in order to protect the owls.

Management Zones

Within the broad parameters of the park mission and mission goals, various approaches to park resource protection, use, and development are possible. Different approaches can be used to address the decision points previously identified in the planning process (Purpose and Need, Decide What Might Be Achieved section). For all three Flagstaff Area monuments, potential management zones were identified

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and then applied for each monument to meet the different alternative concepts developed.

Management zones identify how different areas of the park could be managed to achieve a variety of resources and social conditions and to serve recreational needs. Each zone specifies a particular combination of physical, biological, social, and management conditions. Different actions would be taken by the Park Service in different zones with regard to the types and levels of uses and facilities.

Ten possible zones were described that could be appropriate to various areas in the three Flagstaff Area monuments. Ideas for the range of zones came from responses to the newsletters and from park staff. In formulating alternatives for future park conditions and management, preparers placed these zones in different locations or configurations on the ground, based on different alternative concepts. The seven applicable zones applicable to Walnut Canyon National Monument are described below.

RESOURCE PRESERVATION ZONE

Resource Condition or Character

Resources in this area are fragile and may be in a range of conditions from pristine to endangered. Management actions for resource protection would be high, and tolerance for resource degradation would be very low.

Visitor Experience

Access to these areas would be restricted and permitted only for the purposes of research, traditional cultural activities, or other well-justified special uses. The areas would provide maximum preservation of fragile and/or unique resources, endangered species, sacred sites, and so on. Although access would be restricted, visitors could benefit from the experience of learning that

particularly sensitive resources are preserved for future generations.

Appropriate Kinds of Activities or Facilities

There would be no facilities or developments for visitors, but off-site interpretation would be extensive, to promote visitor education about the value of resource protection. As noted, access would be by permit only for approved activities. Telecommunication infrastructure would not be permitted in this zone.

EXTENDED LEARNING ZONE

Resource Condition or Character

Visitors, sites, and trails would be carefully planned and managed to ensure resource protection and public safety. Areas would be predominately natural, but the sights and sounds of people would be evident. Resources could be modified for essential visitor needs (such as trails and interpretive media) and park operation needs (such as hardening of archeological sites), but they would be changed in a way that harmonizes with the natural and cultural environment. Except for essential changes, the Park Service's tolerance for resource degradation would be low.

Visitor Experience

The emphasis in this experience would be on visiting and learning about significant park resources. These experiences could be either self-guided or ranger-led. Intimate interaction with resources would be offered where possible without undue resource impacts. Structure and direction would be provided, (e.g., trails, interpretive media, signs), but some opportunities for discovery would also be available. Visitors would need to exert some physical effort and make at least a moderate time commitment. At certain times of the day or season there could be opportunities for solitude, but in

general there would be a moderate probability of encountering other visitors. The probability of encountering park staff and other evidence of NPS management would be high.

Appropriate Kinds of Activities or Facilities

Trails (which could be surfaced and up to 5 feet wide), overlooks, and wayside exhibits and other interpretive media would be appropriate in these areas. Support facilities, such as rest rooms and small picnic areas, could also be present. Predominant activities would include hiking, viewing resources, and attending interpretive walks and talks. Telecommunication infrastructure would not be permitted in this zone.

GUIDED ADVENTURE ZONE

Resource Condition or Character

Resources in these areas would appear pristine. Low levels of management for resource protection and visitor safety would be appropriate in these areas, but any resource modifications would be minimal and would harmonize with the natural environment. Tolerance for resource degradation in these areas would be low.

Visitor Experience

Visitors would explore park resources as part of a guided group. Areas where this experience would be offered would usually be untrailed and free from developments. Intimacy with resources, learning, social interaction among the group, and the security of a guided experience would be key elements of this experience. The probability of encountering other groups would be low, and there would be some opportunities for individual solitude. The environment would offer a moderate level of challenge, but the need for individual outdoor skills would be low.

Appropriate Kinds of Activities or Facilities

No permanent facilities would be appropriate in these areas except for primitive trails if deemed necessary for resource protection. Daytime hiking with a guide would be the predominant activity in these areas. Telecommunication infrastructure would not be permitted in this zone.

MOTORIZED SIGHTSEEING ZONE

Resource Condition or Character

Intensive management would be provided in this area to ensure resource protection and public safety (e.g., fences, intensive law enforcement, and restrictions on visitor activities). Resources might be modified (e.g., paving or felling hazard trees) for essential visitor and park operational needs.

Visitor Experience

The paved roadways and associated developments in this area would be used for touring the park, enjoying scenic overlooks and interpretive media, and gaining access to other park areas. Visitor attractions would be convenient and easily accessible. The visitor experience would be generally dependent on a vehicle or bicycle, would involve driving along a well-maintained, paved road, and would be perceived as linear/sequential in nature. Observing the natural environment would be important, and there would be a sense of adventure, but there would be little need for visitors to exert themselves, apply outdoor skills, or spend a long time in the area. The probability of encountering other visitors would be high, and there would be a moderate probability of encountering NPS staff.

Appropriate Kinds of Activities or Facilities

The motorized sightseeing experience would occur in a substantially developed

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area. The paved roads, pullouts, overlooks, and associated short trails and picnic areas, parking areas, and other facilities that support visitor touring would be included in these areas. Most facilities and some trails would be accessible in this area.

Telecommunication infrastructure would not be permitted in this zone.

NATURAL AREA RECREATION ZONE

Resource Condition or Character

Designated trails could be paved and trailside resources manipulated to provide for safety or to prevent impacts off of the trail (e.g., erosion). However, such management actions would be aimed primarily at prevention of secondary impacts and not at trail improvements. There would be a low tolerance for resource degradation in these areas.

Visitor Experience

Emphasis in these areas would be on recreating in a natural setting, therefore, trails would be made of natural or natural-appearing materials. Visitors would be directed to use and stay on designated trails. There would be a moderate probability of encountering other visitors. A moderate amount of off-site interpretive media would be available, but there would not be any on-site interpretation in these areas.

Appropriate Kinds of Activities or Facilities

Facilities, including trails, would be primitive and lie lightly on the land. Improvements would only be made to prevent secondary impacts and provide the minimum safety required for natural setting recreation. Trails would be designed to accommodate a variety of exercise pursuits that can vary from activities on foot to bicycles and horseback; the area would not include motorized conveniences. Telecommunication infrastructure would not be permitted in this zone.

OVERVIEW ZONE

Resource Condition or Character

Resources would appear natural, but paving or other management actions would be taken as necessary to protect resources. Visitors would interact with resources only to the extent possible without undue impact to those resources. Because of the need for visitors to understand park significance, some primary resources must be available for visitors to view in these areas.

Visitor Experience

Visitors would get an overview of park resources and significance in a short time frame and with a minimum of physical exertion. Park orientation and interpretation of primary park themes would be important elements of this experience. Interaction and encounters with other visitors and park staff would be common, but overcrowding would be avoided. Although structured intimacy with some park resources could be possible, viewing resources from a distance or from trail or overlook facilities would be more common.

Appropriate Kinds of Activities or Facilities

Sightseeing, learning about the park, short walks, and attending interpretive programs would be common activities in these areas. Orientation and interpretation facilities, such as visitor centers, kiosks, wayside exhibits, and other interpretive media would be appropriate. Support facilities such as rest rooms and picnic facilities could also be present. Telecommunication infrastructure would not be permitted in this zone.

ADMINISTRATIVE ZONE

Resource Condition or Character

The natural environment would be modified for park operation needs, but they

would be changed in a way that harmonizes with the natural environment. These areas would not be close to sensitive natural or cultural resources, if such resources could not be adequately protected.

Visitor Experience

These areas would not be intended for visitor use; however, if visitor use did not conflict with the primary use of the area, incidental use could be permitted.

Appropriate Kinds of Activities or Facilities

Facilities necessary for park operations or surrounding land uses are appropriate in this area, including park maintenance yards, residential areas, access roads, and utility areas and corridors. Telecommunication infrastructure would be permitted in this zone, in the following locations. For Wupatki, Sunset Crater, and Walnut Canyon radio repeater needs, NPS uses a site at O'Leary Peak on USFS lands. Installation of telecommunications equipment at this site would require permission from the Forest Service. A radio repeater was once located on Woodhouse Mesa near the park visitor center at Wupatki. The Park Service would consider requests for location of equipment at this site based on the ability to install the equipment without visual intrusion and without loss or disturbance of natural or cultural resources. Because of the fragile nature of the resource, no use of NPS land at Sunset Crater for telecommunications would be permitted. If a new visitor center were constructed near I-40 at Walnut Canyon, there could be an opportunity to locate telecommunication equipment there, or at the water tower that is part of the current administrative zone.

Boundary Expansion Criteria

WALNUT CANYON

As previously noted, Walnut Canyon National Monument was established by Presidential Proclamation in 1915 to preserve “prehistoric ruins of ancient cliff dwellings...that “are of great ethnologic, scientific, and educational interest...with as much land as may be necessary for the proper protection thereof.” The monument was enlarged by Presidential Proclamation in 1938. In 1965, Public Land Order 1269 withdrew additional land for the specified purpose of constructing an entrance road to the park. In 1996, Congress expanded the boundaries of park by 1,292 acres specifically to include additional natural and cultural resources that directly contribute to the purpose and significance of the park.

The most recent expansion reflects a portion of a 6,700 acre expansion proposal sponsored by the National Parks and Conservation Association and a local support group (Friends of Walnut Canyon) in the late 1980s and early 1990s. The 1996 legislation added 1,277 acres, previously administered by the Coconino National Forest including the 370-acre entrance road. It also included 53 acres of private land bringing the total of private land contained within the boundaries of the monument to approximately 291.

The park currently occupies approximately 3,600 acres immediately adjacent to corporate boundaries of the City of Flagstaff, Arizona, and is entirely surrounded by the Coconino National Forest. The private land is located on the east side of the monument and involves one landowner.

During the course of this planning process and as specified in Section 604 of the National Parks and Recreation Act of 1978 (16 U.S.C. 1a-5et seq.) an assessment for expanding the boundaries of the

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monument was conducted. Authority for modifying park boundaries is contained in the Land and Water Conservation Fund Act amendments of June 10, 1977 (Public Law 95- 42). A modification to the boundaries of a park is based on one or more of the following criteria:

- Expansion would include significant resources or opportunities for public enjoyment;
- Expansion would address operational and management issues; or
- Expansion would protect monument resources critical to fulfilling the purpose of the park.

Boundary expansions are considered practical or necessary if:

- The added lands could feasibly be administered, taking into consideration the size of the proposed expansion, configuration, ownership, costs, etc.; and
- That other alternatives for management and resource protection are not considered adequate.

A boundary expansion assessment initially determined that both natural and cultural resources that contribute to the purpose and significance of the monument still remain outside current monument boundaries. However, further expansion of the existing boundaries at Walnut Canyon was not recommended at the time because of current planning efforts and proposed actions by adjoining and neighboring land managing agencies. Specific planning efforts that were taken into consideration in this assessment included the following:

- The Coconino National Forest's Flagstaff Lake Mary Ecosystem Analysis (FLEA, 2003), that addresses public uses and recreation, wildlife habitat management, the fire risk reduction on national forest land immediately surrounding the

monument and along the wildland urban interface.

- The City of Flagstaff's Open Space and Greenway Plan (1998); which serves as a guide for the future protection of open spaces and greenways surrounding the City of Flagstaff and adjacent communities including lands administered by the US Forest Service and the National Park Service, while also considering the demands for growth in residential, commercial, and recreational uses.
- The City of Flagstaff and Coconino County's joint Flagstaff Area Regional Land Use and Transportation Plan (2001) that applies to 460 square miles surrounding the City of Flagstaff and addresses population growth issues adjacent to the park on the west side.
- Coconino County's Comprehensive Plan (2003) which addresses ways to protect natural landscapes throughout the county from the adverse effects of unmanaged developed.
- The on-going efforts by the City of Flagstaff and Coconino County to nominate for inclusion under the Arizona Preserve Initiative, three sections of Arizona State Trust land located immediate west and northwest of the park that if developed for residential or commercial purposes could have an adverse impact on park resources and negatively influence the health of the Walnut Canyon ecosystem.

With these planning efforts and existing commitments by these agencies to work with the National Park Service to manage lands adjacent to the monument in a compatible manner, further expansion was not considered necessary at the time.

In making this determination it was identified that there were a number of circumstances that if they were to occur

would compel the National Park Service to reevaluate the need for expanding the boundaries of the monument. They included:

- A change in ability or commitment by Coconino National Forest regarding the interface of USFS lands with the City of Flagstaff;
- A change in the City of Flagstaff's commitment to limit development within the existing Urban Growth Boundary and to effectively manage density development along that boundary; or
- a change in land use or the sale or exchange of State Trust lands that would result in residential or commercial development of these adjacent lands.

It was noted that should any of these situations occur, or should there be a degradation of lands adjacent to and which contain resources that contribute to the significance of Walnut Canyon, the subject of boundary expansion would be reconsidered.

In presenting a discussion regarding boundary expansions it is important to note that at the time of the final writing of the Draft Environmental Impact Statement and Draft General Management Plan for Walnut Canyon, an effort was begun by the National Parks and Conservation Association and the Friends of Walnut Canyon to Two organizations seek a boundary expansion of the park through congressional action. Their goal was to complete the proposal that they had presented in the late 1980s and early 1990s that was only partially addressed with the expansion in 1996. Specifically, the the Friends of Walnut Canyon proposal was requesting that consideration be given to expanding the current boundaries of the park to incorporate and to include portions of the Walnut Creek drainage system that

they believed to be threatened by regional growth. The majority of the land consideration in the proposal included land under USFS jurisdiction and a small percentage of land under jurisdiction of the Arizona State Trust Lands.

In addition and based in part of the proposed boundary expansion being moved forward by the Friends of Walnut Canyon and the National Parks and Conservation Association, the City of Flagstaff and Coconino County, through their Regional Land Use and Transportation Plan, which was ratified by local voters in May 2002, proposed to protect natural and cultural resources around the monument by undertaking measures to formalize inter-reliant commitments by various federal, state, and local governmental agencies. In addition, the Regional Plan proposed the simultaneous pursuit of appropriate expansion of the monument.

In part in response to the Friends of Walnut Canyon's proposal and the recommendations in the Regional Land Use and Transportation Plan, the Board of Supervisors and the City Council initiated an effort in early 2002 to gauge public opinion on support for the proposal to expand the boundaries of the monument. This effort was supported by the National Park Service primarily due to comments that were received on the September 2001 Draft Environmental Impact Statement/Draft General Management Plan for Walnut Canyon expressing concern over the long- term protection of the Walnut Canyon drainage system, including the monument, from regional growth impacts.

The year long process included three public open houses, an educational publication, and a survey of the community. While consensus was reached and members of the community clearly expressed a desire to more permanently conserve the lands of the Walnut Canyon area, public opinion was

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divided regarding the appropriate mechanism for achieving that goal including whether expansion of the boundaries of the monument was needed.

Based on this in put, both the County and City unanimously passed resolutions in late December 2002 that requested assistance from Congress in conducting a study of the lands surrounding the monument. The intent of the study is to evaluate the national significance of the resources of the Walnut Canyon area, the general public's desires for recreational access and economic benefit of the area, and which features and resource values need to be protected and preserved. The study is to include recommendations regarding appropriate management strategies and designations and which agency (individually or collectively), based on their respective missions, is best suited to manage portions or all of the land and resources under consideration. Non-agency assistance is to be used to conduct the study to ensure a high degree of objectivity.

In May 2004, Arizona Senator John McCain and Congressman Rick Renzie introduced federal legislation to provide for a study of the Walnut Canyon area. It is expected that the Senate and the House of Representatives will hold hearings on the bill's introduced by the Arizona Congressional delegation for consideration in the Fiscal Year 2007 or 2008 federal budget.

Actions Common to All Alternatives

Short- range planning is underway simultaneously with this GMP to meet immediate operational needs that will continue to exist regardless of the alternative selected. These are identified in National Park Service- wide initiatives, in Flagstaff Area National Monuments planning documents, such as the Strategic

Plan, Annual Performance Plan, Comprehensive Interpretive Plan, and Resources Management Plan, and in local action plans to resolve safety, accessibility, facility maintenance, and similar issues.

PARTNERSHIPS AND REGIONAL PLANNING

All alternatives presented recognize the opportunity for partnerships for the protection of cultural and natural resources, with the USFS, the State of Arizona, Coconino County, the city of Flagstaff, and private landowners. It is anticipated that the NPS and USFS will actively coordinate a variety of activities that affect the monument and surrounding lands. There will be continued emphasis on monitoring the effects of recreation, grazing, and other human uses on these lands; documentation of unacceptable impacts will provide a basis for management changes to restore resource conditions.

The monument's proximity to the city limits of Flagstaff will require close coordination with city and county planning efforts to ensure preservation of park resources and values. Conversely, both the city and county recognize the value of NPS participation in the preparation, review, and implementation of the Flagstaff Open Spaces and Greenways Plan, the Flagstaff Area Regional Land Use and Transportation Plan, and similar efforts, to achieve mutual goals.

INTERPRETIVE EXHIBITS

Planning and design of new wayside and museum exhibits is in progress, in accordance with the Flagstaff Areas Comprehensive Interpretive Plan, to improve visitor understanding and appreciation of Walnut Canyon resources. New wayside exhibits will replace and expand the existing system of interpretive signs along the entrance road and at major existing visitor use areas. New museum

exhibits will replace the outdated and inaccurate exhibits at the existing visitor center. Like the wayside exhibits, they will convey current knowledge of the park's natural and cultural resources and explain their significance.

ACCESSIBILITY

The National Park Service will remain committed to increasing accessibility to facilities, programs, and services for all visitors, including those with disabilities. New construction and modifications to existing public facilities will comply with the Americans with Disabilities Act and other requirements. To the extent feasible, access will be provided to natural and cultural resource features through modification of existing trails, pullouts, and so on. The Rim Trail will be improved to provide access at least to the canyon overlook, a pithouse, and a pueblo for those with mobility impairments. Where terrain or other constraints prevent physical access to major features, efforts will be made to provide alternative experiences through exhibits, photographs, electronic virtual tours, or other means.

SAFETY

Necessary actions will be taken in the course of all activities to ensure employee and visitor safety. All facilities work will be designed to upgrade and improve safety features.

New and remodeled facilities will be thoroughly evaluated during the design process to ensure that safety remains an upfront consideration. Actions will be taken as needed to address the threat of hantavirus, which is present in many older storage facilities throughout the park.

DESIGNATION OF CRITICAL HABITAT

The U.S. Fish and Wildlife Service (USFWS) recently designated critical habitat for the Mexican spotted owl within Walnut

Canyon National Monument. Any NPS action which could affect designated critical habitat will require consultation with USFWS under the Endangered Species Act.

INHOLDING

There is a parcel of private land within the monument of approximately 291 acres. This inholding has been identified as desirable for acquisition in the monument's Land Protection Plan due to the presence of archeological and ecological resources that are integral to the significance and purpose of the monument.

EXISTING HOUSING AND MAINTENANCE

Existing housing and maintenance facilities will be retained in all alternatives.

NIGHT TIME CLOSURE

Except for very limited, intensively managed visitor activities around the Visitor Center area, the monument would remain closed at night.

BACKCOUNTRY MANAGEMENT

The backcountry of Walnut Canyon National Monument (defined as all areas beyond designated roads, trails, or developed facilities within the monument) has been closed to unguided entry for many years. The 1996 boundary expansion areas have been surveyed, fenced, and signed. Appropriate recreational uses and locations within the expansion areas will be determined by the selected GMP Alternative. Although some alternatives designate new roads and trails and conditions for their use by visitors, the areas within the Resource Preservation Zone will continue to be closed to general visitor use.

FIRE MANAGEMENT

Since 1987, the NPS has conducted a series prescribed fires in ponderosa pine vegetation on the canyon rim terraces. The resource management objectives for fires

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were to thin tree saplings, reduce the buildup of deadwood and vegetation litter, and promote healthy soils and herbaceous groundcover. The fire management program would continue under the recently completed Fire Management Plan for the Flagstaff Area National Monuments. Public involvement in the development of fire management strategies, impact analysis, and site-specific decisions regarding fire management program implementation have been undertaken via a separate planning and NEPA compliance process, and are beyond the scope of this general management plan.

DETAILED IMPLEMENTATION PLANNING

The alternatives propose “key actions” at the conceptual level for new facilities, roads, trails, and public uses within Walnut Canyon National Monument. Prior to implementation, many of the key actions will require detailed implementation planning, site-specific resource impact analysis, and further public involvement, tribal consultation, and interagency coordination pursuant to Federal regulations and NPS policies.

ALTERNATIVE DESCRIPTIONS

No-Action Alternative: Existing Conditions

Walnut Canyon National Monument is seven miles east of Flagstaff and is reached via a three-mile paved entrance road from I-40 (see Existing Conditions map). The entrance station is located 1/4 mile north of the visitor center. There are three small picnic areas along the entrance road and another larger one near the visitor center.

Walnut Canyon National Monument preserves a portion of a once active prehistoric community. The shelter provided by the natural alcoves in the steep

canyon walls and the diversity of flora and fauna were attractive to the people who lived here then just as they are to us today. The current management provides the public with a glimpse of the remnants of this community while protecting its sensitive features.

Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night. FR303 and other U.S. Forest Service roads allow 24-hour access to USFS lands surrounding the monument. Entrance fees are required at the monument; access is limited to established trails, roadways, and developed facilities. Areas not designated and identified for public activities are closed to unguided entry.

The road terminates in a parking area at the visitor center, which contains an information/fee collection desk, exhibits, a bookstore, and an observation room with a panoramic view. Maintenance facilities and park housing are located nearby. Additional details regarding the current use and development of the monument can be found in the Affected Environment, Operational Efficiency section.

Orientation and interpretation are accomplished primarily through the visitor center and the self-guided Island and Rim Trails. The Island Trail descends 185 feet into the canyon, passing six cliff dwellings with a total of 25 rooms. Many other cliff dwellings are visible across the canyon from the Island Trail. This strenuous 0.9-mile round trip is one of the best ways to experience the park. The fairly level 0.7-mile Rim Trail provides canyon views and access to a pithouse and a surface pueblo. Various interpretive programs, including guided hikes to the historic ranger cabin and additional cliff dwellings, are offered as staffing permits.

Accessible rest rooms are located at the visitor center. The Rim Trail is currently

partially accessible, but other trails are not, due to terrain.

The monument boundary was expanded in 1996 to include approximately 1,300 additional acres. The NPS would survey the new boundary and inventory natural and cultural resources. After this is done, consideration would be given to continuation of traditional, nonconsumptive, recreational activities in appropriate areas.

The NPS and USFS work cooperatively in the areas of law enforcement, wildland fire, resource protection and management, interpretation, and facility management and will continue to do so. NPS staff frequently assists visitors in finding suitable USFS lands on which to engage in recreational and other activities that may not be suitable on NPS lands. Conversely, USFS staff direct visitors who are looking for more structured interpretive visits to NPS lands.

Cooperation extends to sharing of equipment and staffing, administration of special use permits, research permits, and a variety of other activities.

Visitor satisfaction with the current park experience is high, as measured by the 2000 Visitor Survey Card responses (Machlis 2000). The survey showed that 95% of visitors were satisfied with opportunities for "learning about nature, history or culture" and 81% were satisfied with "sightseeing opportunities." Ninety-eight percent were satisfied with outdoor recreation (camping, bicycling, boating, hiking, etc.) opportunities.

Alternative 1: Diversify Opportunities for Visitor Use

GENERAL CONCEPT

The goal of this alternative is to provide more diverse visitor experiences and access to more of the park (see Alternative 1 map), including areas acquired in the 1996 boundary expansion. This alternative

emphasizes easier access to different parts of the monument, in order to decrease congestion at the visitor center and on the Island Trail. There would be more choices and opportunities for different types of visitor experiences. A variety of motorized and nonmotorized activities would be spread across the area north of the canyon rim. A new scenic drive would be developed along the north rim to disperse use to a new area and provide different views of the canyon. A portion of an existing USFS road would be used to link to the new scenic drive.

The existing visitor center would be remodeled to accommodate more visitor use by removing administrative offices. Parking would be redesigned and relocated away from the canyon rim, and visitors would walk a short trail to the canyon edge. The park would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303. Installation of an entrance station/fee collection facility near the I-40 intersection would be considered.

This alternative responds to public input regarding the need for increased sightseeing from automobiles; for hiking, biking, and horseback access; and for improved balance among various public uses. This alternative also responds to the concern that visitor use exceeds facility design capacity.

KEY ACTIONS

- The existing entrance road and picnic areas would remain, but parking and orientation would be redesigned and relocated away from the canyon rim. Visitors would walk a short trail to the canyon and the existing visitor center. The existing parking area would be kept for handicapped and administrative parking only. The park would remain day-use only, with the road gated at night at the

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intersection of the entrance road and FR303.

- Offices would be removed from the visitor center, and the building would be remodeled to allow more space for visitor orientation, new exhibits, and group presentations. New administrative offices would be constructed near the new parking area.
- An existing primitive USFS road would be substantially upgraded and new road segments would be constructed to provide a new scenic drive along the north rim. Initially, this would be a semiprimitive guided experience until improvements to existing dirt roads could be accomplished.
- A new pullout and/or turnaround would be constructed at the park entrance near the I-40 exit, and might include an entrance station/fee collection facility. New wayside exhibits at this location would better orient and prepare park visitors before they encounter park resources. Additional orientation media would be installed at the new parking area near the visitor center to alert visitors to the diverse experiences available (walking, driving, biking, guided hikes).
- In addition to the existing visitor center, self-guided trails, and ranger-led hikes, guided tours to the recently acquired First Fort archeological area would be possible via the new north rim scenic drive. Additional guided activities would occur in areas of the north rim. Interpretation and new wayside exhibits along the entrance and rim roads would provide the opportunity to learn about different aspects of the park and its place in the regional story.
- Hiking, biking, and horseback riding would occur on existing roads and

trails on the rim, in western portions of the newly acquired lands.

- Areas of the park not zoned for administrative or visitor use would be closed to protect resources.

Alternative 2 (Preferred): Emphasize Preservation

GENERAL CONCEPT

This alternative would preserve untrailed expanses, unfragmented natural systems, and relatively pristine resource conditions throughout much of the park (see Alternative 2 map). Walnut Canyon would be protected as a critical wildlife corridor. Visitation to Walnut Canyon would be managed with the goal of providing quality learning opportunities in a quieter, more intimate historic atmosphere. This alternative would provide a glimpse of the remnants of the prehistoric community and canyon flora and fauna, while protecting sensitive features and maintaining the health of the canyon ecosystem. Preservation and protection of threatened and endangered species, preservation of riparian habitat, and maintenance of the long-term integrity of systems and natural processes would be emphasized.

Because past management of Walnut Canyon has worked well, this alternative explores ways to keep future visitor experience and resource protection comparable to today's, by providing better ways to handle any increased visitation. The natural soundscape and tranquil setting of the canyon would be enhanced by removing some facilities from the rim area and placing them in a relatively less sensitive area near I-40. The park would remain day-use only, with the road gated at night near I-40 and at FR303. Ticketing, reservation, or shuttle systems could be implemented in the future to alleviate traffic congestion and maintain quality visitor experiences. The new visitor center and parking lot would be designed to

include collection of entrance fees and to be readily adaptable for shuttle system use if needed in the future. Current recreational uses in the western end of the monument would be redirected to nearby USFS lands.

Consistent with this concept, efforts would be made to provide a broader range of educational offerings. Some of these experiences would be provided through partnerships with other agencies or organizations. The ratio of visitors to educators would be kept low to provide for a personalized experience. Compared with the No- Action Alternative, more ranger-guided tours would be offered to archeological sites. Acquisition of private land in the park would facilitate providing this alternative's visitor experiences.

KEY ACTIONS

- The existing entrance road and parking area would be retained and used as they are now unless crowding increases to the point that visitor experiences and/or resources are degraded. Then actions would be taken to control visitor numbers.
- A new fully accessible visitor center and parking area would be built near I-40 at the park entrance, to orient visitors before they encounter park resources, and to collect entrance fees. Visitation numbers could be managed from this location when necessary.
- The modern additions to the existing historic Civilian Conservation Corps (CCC)-constructed visitor center would be removed, making the building less visible on the rim and restoring the small, intimate nature of the historic structure. The remaining portion would be adaptively used for both trailhead and canyon orientation and as an educational center for more in-depth learning opportunities, such as ranger talks, special events, workshops, seminars, demonstrations, and so on.
- Three gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road while allowing 24-hour use of FR303.
- Within the Extended Learning Zone, self-guided trails in the vicinity of the current visitor center would remain as they are now.
- The current program of ranger-led tours to Ranger Ledge and Ranger Cabin could be expanded from around 45 site tours with about 270 visitors per year, to around 156 tours with about 1,000 visitors per year.
- Efforts would be made through development of new media to provide a broader range of educational and interpretive programs aimed at in-depth learning. Some of these experiences would be provided through partnerships with affiliated tribes, organizations, institutions, and/or other agencies.
- Up to 16 guided night-time walks on the Island Trail could be offered from May through August, limited to about 100 visitors per year.
- In the Ranger Cabin area, the NPS would host up to 120 half-day outdoor environmental education classes per year. Classes would be limited to 35 students and teachers.
- A self-guided trail would be developed along existing administrative roads to Ranger Cabin. Because of resource impact concerns, this use would be carefully managed to ensure no more than 15 visitors are on the trail at any given time, with up to 30 total visitors per day. The trail would be closed while environmental education activities are scheduled in the Ranger Cabin area. Self-guided

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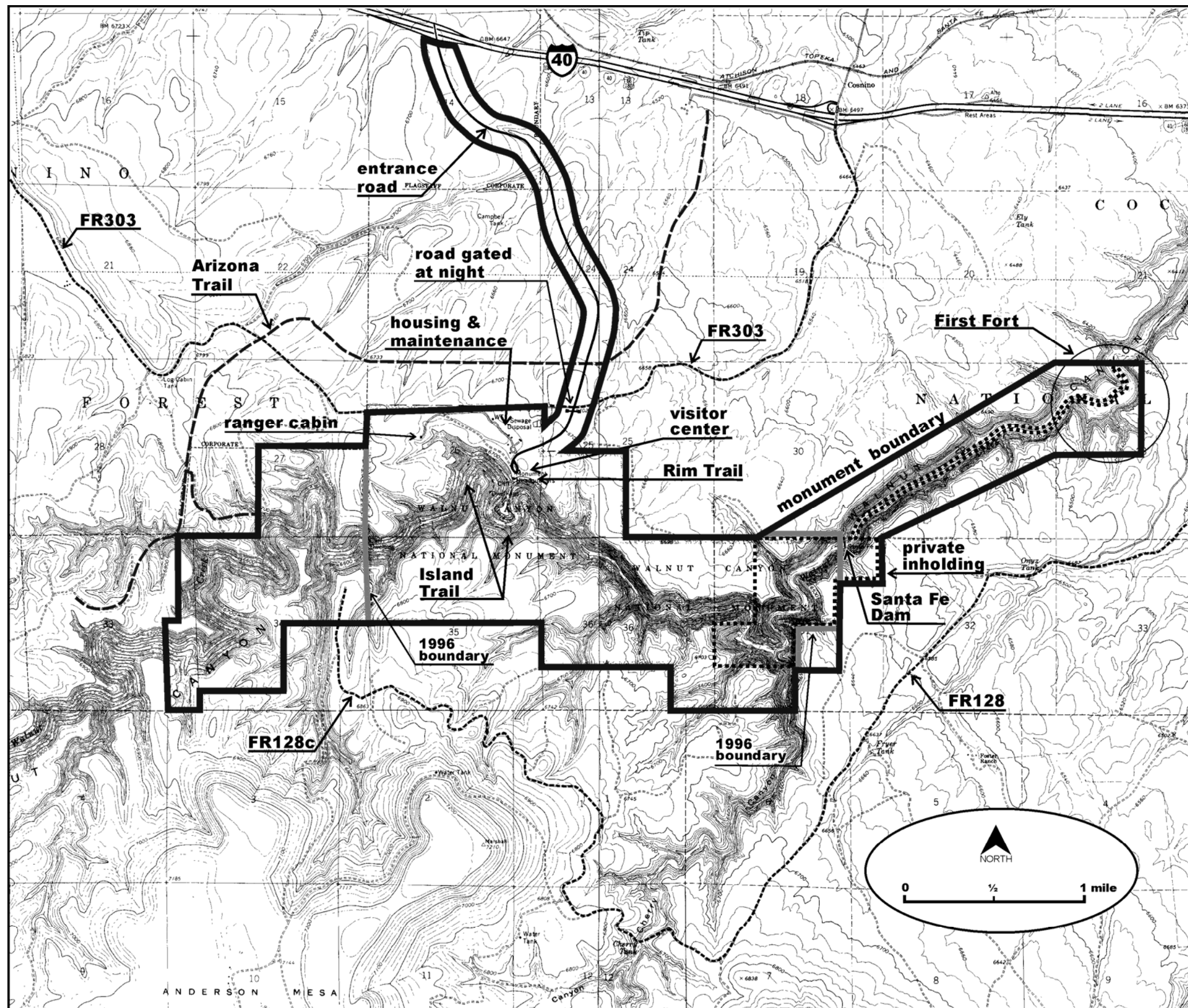
trail use would be limited to about 8,000 visitors per year.

- Ranger-guided day-hikes to the eastern canyon area would be offered on about 10 weekends per year, with about 170 total visitors per year. An existing USFS road would be upgraded and used administratively to facilitate this activity. A parking area would be established within the monument from which the guided hikes would be staged. Prior to implementation, careful planning would be completed and additional NEPA, NHPA Section 106, and ESA Sect 7 consultation would be required to ensure the actual access route, staging area, hiking route, and visitor

management strategies do not adversely affect archeological resources, protected wildlife species, the fragile canyon slopes, and the riparian corridor along the canyon bottom.

- Visitors desiring hiking, biking, or horseback riding experiences would be directed to nearby forest land, where such experiences are already available.
- Areas of the park not zoned for visitor or administrative uses would be closed to protect resources.

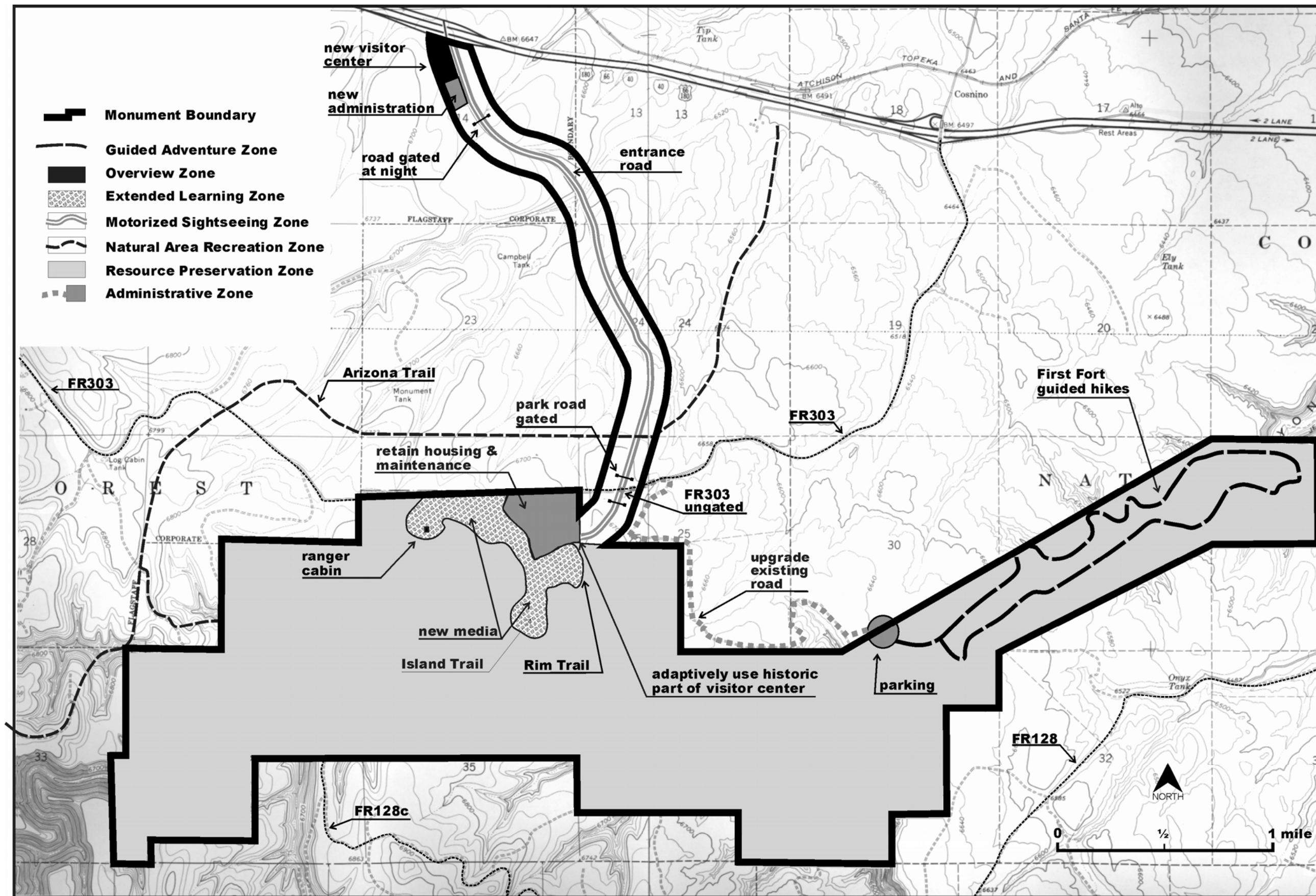




Walnut Canyon National Monument - Arizona Existing Conditions

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UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE



Walnut Canyon National Monument - Arizona
Alternative 2
(Preferred)

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

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MITIGATING MEASURES

Under any of the action alternatives proposed, there would be mitigating measures used to reduce the effects of actions. They include the following.

Preservation, rehabilitation, and restoration, as well as the daily, cyclical, and seasonal maintenance of cultural resources, would be undertaken in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Wherever possible, new facilities would be located to avoid impacts to important park resources and values. In many areas soils and vegetation are already impacted to a degree by various human and natural activities. Construction would take advantage of these previously disturbed areas wherever possible.

All new construction would be completed using sustainable practices, such as the use of environmentally friendly materials, sustainable building materials, and efficient utility systems. Components of such projects would also be assessed for visual quality. Utilities and support functions, such as water, sewer, electricity, roads, and parking areas will be evaluated and designed to mitigate visual impacts.

Temporary impacts associated with construction would occur, such as soil and vegetation disturbance and the possibility of soil erosion. In an effort to avoid introduction of exotic plant species, no hay bales would be used. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by NPS to be weed-free (e.g., Coors barley straw or Arizona winter wheat straw), cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales. Standard erosion control measures such as silt fences

and/or sand bags would also be used to minimize any potential soil erosion.

Potential compaction and erosion of bare soils would be minimized by conserving topsoil in windrows. The use of conserved topsoil would help preserve microorganisms and seeds of native plants. The topsoil would be respread in as near to the original location as possible and supplemented with scarification, mulching, seeding, and/or planting with species native to the immediate area. This would reduce construction scars and erosion.

Although soil side-cast during construction would be susceptible to some erosion, such erosion would be minimized by placing silt fencing around the excavated soil. Excavated soil may be used in the construction project; excess soil would be stored in approved areas. If used, silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 75% full. Silt removal would be accomplished in such a way as to avoid introduction into any wetlands or flowing water bodies.

Revegetation plantings would use native species from genetic stocks originating in the park. Revegetation efforts would be to reconstruct the natural spacing, abundance, and diversity of native plant species. All disturbed areas would be restored as nearly as possible to preconstruction conditions shortly after construction activities are completed. The principal goal is to avoid interfering with natural processes.

Some petrochemicals from construction equipment could seep into the soil. To minimize this possibility, equipment would be checked frequently to identify and repair any leaks. Any blasting would conform with NPS- 65, Explosives Use and Blasting Program (1991), specifications. All blasting would use the minimum amount necessary

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to accomplish the task. All blasting would be used to shatter, not distribute, any material.

Construction zones would be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

Prior to any land- modifying activity, a qualified professional archeologist would inspect the present ground surface of the proposed development site and the immediate vicinity for the presence of cultural remains, both prehistoric and historic. Should newly discovered or previously unrecorded cultural remains be located, additional investigations would be accomplished prior to earth- disturbing activities. Similarly, in those areas where subsurface remains appear likely, an archeologist would be on hand to monitor land- modifying actions.

Construction activities would affect the uppermost layers of earth as vehicles compact the soils and alter the horizontal and vertical distribution of buried archeological remains. These activities would also destroy surface sites by damaging and destroying artifactual remains and their contextual environments. Loss of these resources could be partially mitigated through excavation and curation prior to construction. Additional archeological investigations, including recording and mapping, and a rigorous program of sampling/collecting/testing of archeological features and artifacts would be performed in those areas where cultural remains would be affected by the plan.

Should construction unearth previously undiscovered archeological resources, work would be stopped in the area of any discovery and the park would consult with the State Historic Preservation Officer/Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the American Indian Graves Protection and Repatriation Act (1990) would be followed.

The Park Service would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction. Equipment traffic would be minimized in the area of the site. Equipment and materials staging areas would also avoid known archeological and ethnographic resources.

Efforts to identify ethnographic resources will continue in consultation with traditionally associated tribes. A traditional use study will be conducted to understand how associated tribes have used park resources in the past and will need to continue to use them in the future. Based on the results of the study, agreement documents will be developed with associated tribes to ensure access to traditionally used resources in keeping with NPS policies Executive Order 13007. Tribal consultation will continue to take place with the implementation of individual undertakings pursuant to the NHPA to ensure that previously unidentified ethnographic resources are not affected.

The flow of vehicle traffic on roads would be maintained as much as possible during construction periods. Construction delays would normally be limited. There may be some periods when the nature of the construction work may require temporary road closures. All efforts would be made to reduce these as much as possible and to alert park staff as soon as possible if delays longer than normal are expected. Visitors would be informed of construction activities and associated delays. Traffic would be managed to ensure timely access to private residents and ranches along the road.

Contractors would coordinate with park staff to reduce disruption in normal park activities. Equipment would not be stored along the roadway overnight without prior approval of park staff. Construction workers and supervisors would be informed about the special sensitivity of park values, regulations, an appropriate housekeeping.

The NPS would continue to acquire information on the distribution, abundance, status, trend, and habitat conditions for Federally- protected and other sensitive and rare species.

Fences in pronghorn habitat would be modified to allow for their movement by raising the lowest strand in at least 4 places per linear mile of fence, and by using non-barbed wire on the lowest strand. Any interior range fences that are not needed would be removed.

Continued night time and backcountry closures would reduce some visitor- use and NPS operational impacts to special status species.

Site- specific surveys for Federally-protected and other rare plant species would be completed prior to any ground, vegetation, or wetland disturbance. If any plant species of concern are discovered, mitigating measures include relocating

facilities to avoid the plant population, modifying the project design, or as a last resort propagation/transplanting in other suitable habitat. For Federally- protected plants, additional conservation measures would be developed and adopted in consultation with the U.S. Fish and Wildlife Service.

The NPS would cooperate with the U.S. Fish and Wildlife Service and USFS to implement the Mexican Spotted Owl Recovery Plan (USFWS 1995). Specific actions include: monitoring nesting activity and breeding success; establishing 100 acre nest/roost buffers; reducing the risk of severe wildfire; and conserving or improving specific microhabitat attributes. Examples of other conservation measures include: seasonal area closures around nest/roost sites; seasonal activity/noise restrictions in protected habitat or breeding territories; and monitoring and research to understand the effects of NPS administrative and visitor activities on Mexican spotted owls and their habitat.

The NPS will work with the Fish and Wildlife Service to collect baseline information on ambient noise from traffic, facility maintenance activities, and recreation in areas of high human use in light of the acoustic properties of the inner canyon environment.

The NPS will work with the Fish and Wildlife Service and others to develop studies that determine the effects of recreation on MSO. This research should include monitoring PACs to determine occupancy and reproduction.

The NPS will monitor human use of Walnut Canyon National Monument. This information will assist managers in determining the impacts of recreation on sensitive species and habitats.

In accordance with the U.S. Fish and Wildlife Service Biological Opinion for this

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general management plan (U.S. Fish and Wildlife Service 2005), the NPS would cease implementation and re-initiate consultation under Section 7 of the Endangered Species Act if: (1) implementation results in unforeseen harassment, harm, or take of a listed species; (2) implementation results in unforeseen adverse effects on designated Critical Habitat; (3) new research or monitoring information reveals the effects of implementation are more severe than originally considered; (4) another species declines to the point of being newly listed or critical habitat for another species is newly designated.

The NPS would consult with the U.S. Fish and Wildlife Service for any future actions not assessed during consultation for the Preferred Alternative (U.S. Fish and Wildlife Service, 2005). Example actions include: (1) construction of new facilities not identified in the Preferred Alternative; (2) any significant change in use of existing facilities; (3) any significant change in visitor activities; (4) research, resource management, and other administrative activities in designated Critical Habitat; or (5) revision of outdated "action/implementation" plans (for example, the fire management plan).

SELECTION OF THE PREFERRED ALTERNATIVE

In order to develop proposed actions, all of the alternatives for each park were evaluated. To minimize the influence of individual biases and opinions, the team used an objective analysis process called "Choosing by Advantages" (CBA). This process, which has been used extensively by government agencies and the private sector, evaluates different choices (in this case, the alternatives for each park) by identifying and comparing the relative advantages of each according to a set of criteria.

One of the greatest strengths of the CBA system is its fundamental philosophy: decisions must be anchored in relevant facts. For example, the question "Is it more important to protect natural resources or cultural resources?" is "unanchored," because it has no relevant facts on which to make a decision. Without such facts, it is impossible to make a defensible decision.

The CBA process instead asks which alternative gives the greatest advantage. To answer this question, relevant facts would be used to determine the advantages the alternatives provide. To ensure logical and trackable process, the criteria used to evaluate the alternatives were derived from the impact topics in the EIS. Alternatives were evaluated to see how well they:

- **MAXIMIZE PROTECTION OF CULTURAL RESOURCES** (long-term integrity of archeological resources and cultural landscapes, historic character of the built environment, long-term integrity of ethnographic resources)
- **MAXIMIZE PROTECTION OF NATURAL RESOURCES** (long-term integrity of natural systems and processes, threatened and endangered species and sensitive species, long-term integrity of geological features, floodplains and riparian habitat)
- **EXPAND DIVERSITY OF VISITOR EXPERIENCE** (ability to experience full range of resources related to significance, provide a diversity of opportunities to experience park resources, and perceived wild character)
- **LIMIT EFFECT ON NEIGHBORS** (park neighbors; local, state, and tribal land management; land/resource managing agencies)
- **IMPROVE OPERATIONAL EFFICIENCY** (health and safety, conservation, distance to work, management of resources, communication)

Alternatives for each of the three monuments were rated on the attributes relating to each of the factors just listed. Then the advantages of the attributes were compared and the alternative with the most advantages was selected. Costs for each alternative versus advantages provided were compared and analyzed.

A GMP provides a framework for proactive decision making, including decisions on visitor use, natural and cultural resource management, and park development. The plan prescribes resource conditions and visitor experiences that are to be achieved and maintained over time. Park development is considered in general needs rather than in specifics. For the purposes of cost estimating, general assumptions are made regarding amounts and sizes of development. These assumptions are then carried across to all alternatives so that comparable costs can be considered for each alternative.

Staffing considerations are considered to be a part of life cycle costing. The existing staff for the three monuments totals 42, which includes shared management, division chiefs, and administration. Approximating a breakdown between the parks, the staffing is Wupatki, 16, Walnut Canyon, 14, and Sunset Crater Volcano, 12. The current staffing provides minimal resource protection and visitor service, and many tasks within the monuments are being deferred. The parks' 5- year FTE projection increases staffing levels in all three monuments by one- third. By park, the staffing would be Wupatki, 21.3, Walnut Canyon, 18.7, and Sunset Crater Volcano, 16. These figures are base staffing needed for the No- Action Alternative. Staffing increases needed by different alternatives are included in Appendix C. Those costs are included in Table 1: Summary of Comparative Costs.

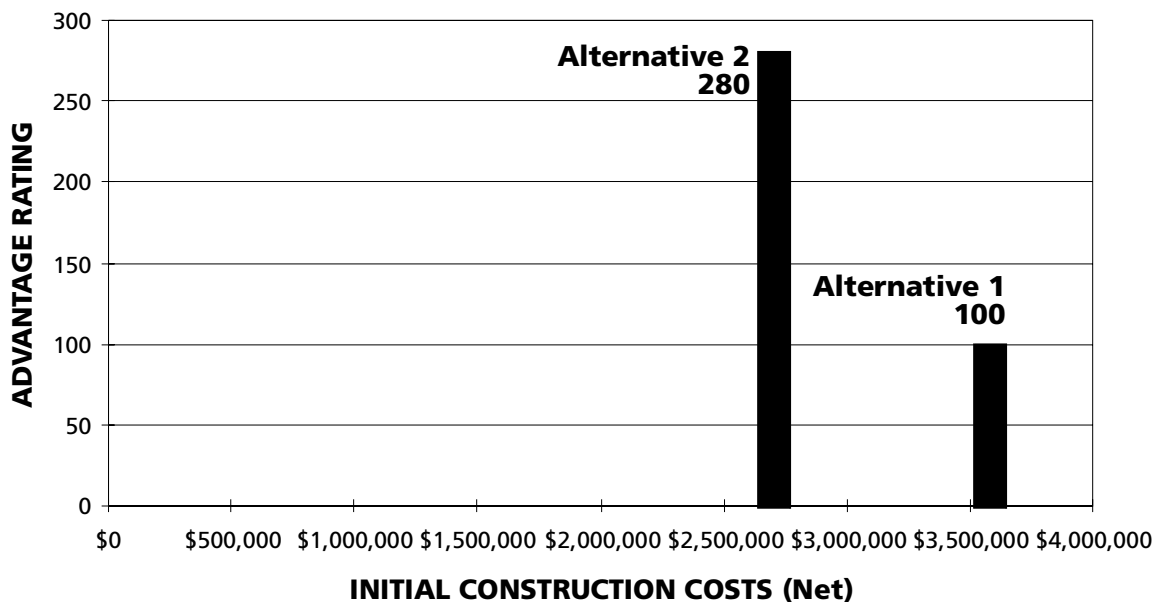
Table 1: Summary of Comparative Costs (FY 2000 Dollars)		
	Alternative 1	Alternative 2 (Preferred)
Initial Development Costs	\$3,531,000	\$ 2,687,000
Total Life Cycle Costs (Present Worth)	\$4,447,000	\$3,945,000

Costs identified in the GMP are not intended to replace more detailed consideration of needs, sizes, and amounts of future development. They should not be used as a basis for money requests until further analysis has been completed. Costs and items considered are shown in appendix C.

Comparative costs for the alternatives include both initial development costs and total life cycle costs. Initial development costs are the estimated construction costs of the alternatives. Demolition, labor, and materials for buildings, roads, trails, exhibits, and parking are included. Estimated costs are based on costs for similar types of development in other parks from the Denver Service Center Class "C" Estimating Guide. Life cycle costs consider the costs of each alternative over a period of time. Life cycle costs include the costs of operating buildings, the staffing required, maintenance, and replacement costs of alternative elements. The life cycle costs below are for a 25- year period. It is important to note that all estimate are general, in keeping with the general nature of GMP alternatives, and should be used for comparison purposes only.

Selection of the preferred alternative considers the advantages provided by each alternative (from the CBA) as compared to the cost of the alternative. The chart on the following page summarizes the results. Alternative 2 provides the greatest

Choosing by Advantages



advantages and is the lowest cost. Alternative 1 provides a slightly more diverse Visitor experience, but had substantially less resource protection.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of

the environment without degradations, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety, of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

Generally this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources." (Council on Environmental Quality, "Forty Most Asked Questions Concerning CEQ's National Environmental

Policy Act Regulations" [40 CFR 1500-1508], Federal Register Vol. 46, No. 55, 18026- 18038, March 23, 1981: Question 6a).

The No- Action Alternative represents the current management direction for Walnut Canyon National Monument. The existing use and development of the park is based on planning initiated and implemented during the Mission 66 program. Personal services interpretation and resource protection patrols are sporadic at the two archeological interpretive areas (Island and Rim trails and at ranger cabin). Resource protection patrols are even less frequent on the south side of the canyon. The majority of visitors to the park see the two archeological areas on their own with no on- site NPS presence. The ranger cabin area is by guided tour only. For resource protection purposes, areas of the park other than the developed sites and administrative areas are closed to unguided entry. Since the No- Action Alternative maintains the Mission 66 visitor experience, diversity of educational opportunities is limited. Protection of cultural and natural resources would be less enhanced than under Alternative 2. Visitor opportunities would not be as diverse as under Alternative 1. The No- Action Alternative does not fully realize provisions 3, 4, 5, and 6 of the goals.

Alternative 1 provides more diverse visitor experience and access to more of the park to decrease congestion at the visitor center and on the Island Trail meeting goals 3 and 5 of the National Environment Policy Act. A variety of motorized and nonmotorized activities would be spread across the area north of the canyon rim. Parking would be redesigned and relocated away from the canyon rim, and visitors would walk a short trail to the canyon edge. The park would remain day- use only, with the road gated at night at the intersection of the entrance road and FR303. Gating the road may disrupt recreational use of the road (such as biking and jogging) and may affect access to

grazing allotments, not fully realizing goal 4. The existing visitor center would be remodeled to accommodate more visitor use by removing administrative offices, and a new scenic drive would be developed along the north rim to disperse use to a new area and provide different views of the canyon. Construction of a scenic drive in the east end of the park would fragment wildlife habitat, not meeting goal 6 of the National Environmental Policy Act. Areas of the park not zoned for administrative or visitor use would remain closed to protect resources, partially realizing goal 6. As compared to the No- Action Alternative and Alternative 2, Alternative 1 meets goals 3 and 5 by providing more diverse visitor experiences, and partially realizes goals 4 and 6. Protection of natural and cultural resources would not be as enhanced as under Alternative 2.

Alternative 2 would preserve untrailed expanses, unfragmented natural systems, and relatively pristine resource conditions throughout much of the park. Walnut Canyon would be protected as a critical wildlife corridor, meeting goal 6 of the National Environmental Policy Act. Visitation to the park would be managed with the goal of providing quality learning opportunities in an intimate atmosphere while maintaining the health of the canyon ecosystem. Preservation and protection of threatened and endangered species, preservation of riparian habitat, and maintenance of the long- term integrity of systems and natural processes would be emphasized. Efforts would be made to provide a broader range of educational programs (ranger guided hikes in the east end of the park and a self- guided trail to ranger cabin), partially realizing goals 3 and 5 of the National Environmental Policy Act. The park entrance road would be gated at night, while allowing 24- hour use of FR303. Gating the road may disrupt recreational use of the road (such as biking and jogging)

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and may affect access to grazing allotments, not fully realizing goal 4. Compared with the No- Action Alternative and Alternative 1, Alternative 2 provides the greatest protection to the cultural and natural resources of the park.

After careful review of potential resource and visitor impacts, and developing proposed mitigation for impacts to natural and cultural resources, the environmentally preferred alternative is Alternative 2. Alternative 2 surpasses the other alternatives in best realizing the full range of national environmental policy goals as stated in § 101 of the National Environmental Policy Act. Although other alternatives may achieve greater levels of individual protection for cultural resources or natural resources, or better enhance visitor experience, Alternative 2 overall does (1) provides a high level of protection of natural and cultural resources while concurrently attaining the widest range of neutral and beneficial uses of the environment without degradation; (2) maintains an environment that supports diversity and variety of individual choice; and, (3) integrates resource protection with an appropriate range of visitor uses.

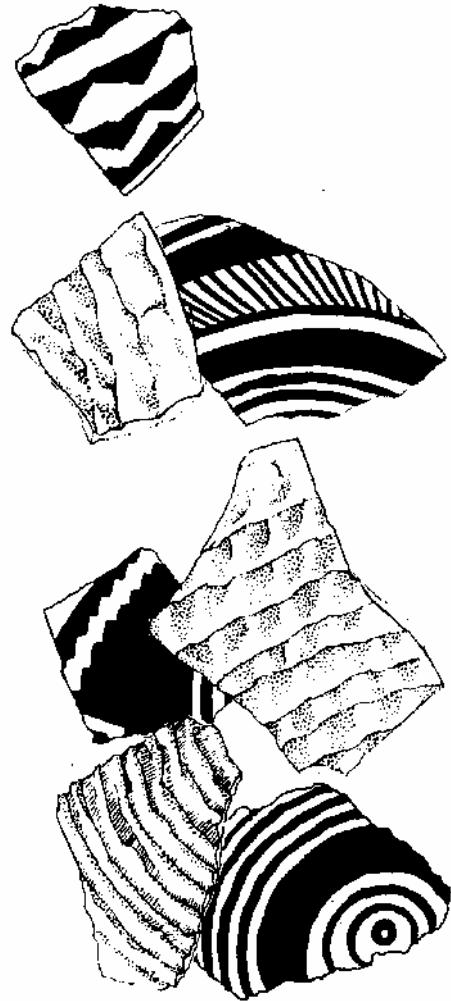


Table 2: Summary of Alternatives

No-Action Alternative: Existing Conditions	Alternative 1: Diversity Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
<p>Under the No-Action Alternative visitors would continue to access Walnut Canyon via a three-mile paved entrance road from I-40 and the entrance station 1/4 mile north of the visitor center. The three small picnic areas along the entrance road and another larger one near the visitor center would remain. The public would continue to be provided with a glimpse of the remnants of a once-active prehistoric community while protecting its sensitive features. The monument would continue to be operated as a day-use area, and the visitor center parking area would be closed and gated at night. Entrance fees would continue to be collected at the monument and access would continue to be limited to established trails, roadways, and developed facilities. Areas not designated and identified for public activities would remain closed to unguided entry. The road terminates in a parking area at the visitor center, which contains an information/fee collection desk, exhibits, a bookstore, and an observation room with a panoramic view. These facilities would continue to be available. Location of maintenance facilities and park housing would remain unchanged. Orientation and interpretation would continue to be accomplished via the visitor center and the self-guided Island and Rim Trails. Various interpretive programs, including guided hikes to the historic ranger cabin and</p>	<p>Under Alternative 1, the existing entrance road and picnic areas would remain, but parking and orientation would be redesigned and relocated away from the canyon rim. Visitors would walk a short trail to the canyon and the existing visitor center. The existing parking area would be kept for handicapped and administrative parking only. The park would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303. Offices would be removed from the visitor center, and the building would be remodeled to allow more space for visitor orientation, new exhibits, and group presentations. New administrative offices would be constructed near the new parking area. An existing primitive USFS road would be substantially upgraded and new road segments would be constructed to provide a new scenic drive along the north rim. Initially, this would be a semiprimitive guided experience until improvements to existing dirt roads could be accomplished. A new pullout and/or turnaround would be constructed at the park entrance near the I-40 exit, and might include an entrance station/fee collection facility. New wayside exhibits at this location would better orient and prepare park visitors before they encounter park resources. Additional orientation media would be installed at the new parking area near the visitor center to</p>	<p>Under Alternative 2, the existing entrance road and parking area would be retained and used as they are now unless crowding increases to the point that visitor experiences and/or resources are degraded. Then actions would be taken to control visitor numbers. A new fully accessible visitor center and parking area would be built near I-40 at the park entrance, to orient visitors before they encounter park resources, and to collect entrance fees. Visitation numbers could be managed from this location when necessary. The modern additions to the existing historic Civilian Conservation Corps (CCC)-constructed visitor center would be removed, making the building less visible on the rim and restoring the small, intimate nature of the historic structure. The remaining portion would be adaptively used for both trailhead and canyon orientation and as an educational center for more in-depth learning opportunities, such as ranger talks, special events, workshops, seminars, demonstrations, and so on. Three gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road while allowing 24-hour use of FR303. Within the Extended Learning Zone, self-guided trails in the vicinity of the current visitor center would remain as they are now. Ranger-guided activities</p>

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Table 2: Summary of Alternatives

No-Action Alternative: Existing Conditions	Alternative 1: Diversity Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
<p>additional cliff dwellings, would continue to be offered as staffing permits. The monument boundary was expanded in 1996. The NPS would survey the new boundary and inventory natural and cultural resources. After this is done, consideration would be given to continuation of traditional, nonconsumptive, recreational activities in appropriate areas. The NPS and USFS would continue to work cooperatively in the areas of law enforcement, wildland fire, resource protection and management, interpretation, and facility management.</p>	<p>alert visitors to the diverse experiences available (walking, driving, biking, guided hikes). In addition to the existing visitor center, self-guided trails, and ranger-led hikes, guided tours to the recently acquired First Fort archeological area would be possible via the new north rim scenic drive. Additional guided activities would occur in areas of the north rim. Interpretation and new wayside exhibits along the entrance and rim roads would provide the opportunity to learn about different aspects of the park and its place in the regional story. Hiking, biking, and horseback riding would occur on existing roads and trails on the rim, in western portions of the newly acquired lands. Areas of the park not zoned for administrative or visitor use would be closed to protect resources.</p>	<p>would be expanded in the Ranger Ledge-Ranger Cabin area west of the Visitor Center. Efforts would be made through development of new media to provide a broader range of educational and interpretive programs aimed at in-depth learning. Some of these experiences would be provided through partnerships with affiliated tribes, organizations, institutions, and/or other agencies. The NPS would host environmental education classes in the Ranger Cabin area. A self-guided trail would be developed along existing administrative roads to the ranger cabin area, with careful visitor management strategies to reduce impacts to sensitive resources. Visitors would have access to the eastern end of the park via ranger-guided hikes. An existing USFS road would be upgraded and used administratively to facilitate these guided activities. A parking area would be established within the monument from which the guided hikes would be staged. Visitors desiring hiking, biking, or horseback riding experiences would be directed to nearby forest lands, where such experiences are already available. Areas of the park not zoned for visitor or administrative uses would be closed to protect resources.</p>

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
Archeological Resources	The No-Action Alternative would have a major beneficial effect on maintaining the long-term integrity of the majority of archeological resources within the monument by concentrating visitor activities and park management impacts on previously disturbed and stabilized sites. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	Alternative 1 would have a major long-term adverse effect on at least 20% of the archeological resources (60-70 archeological sites) in the monument. This adverse effect would be offset to some degree by benefits derived from visitors receiving more education and an enhanced appreciation of the resources from expanded interpretive media and from participating in guided adventures. However, the net effect would be a significant increase in the degradation of sensitive archeological resources caused by construction of the north rim scenic drive and the increased visitor access to backcountry resources, and the inevitable impacts that would result from increasing visitation to archeological sites. The direct, indirect and cumulative impacts of Alternative 1 would have a major long-term adverse effect on archeological resources in the monument. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	Alternative 2 would result in moderately adverse long-term effects to approximately 14-20 archeological resources as a result of implementing this alternative. There would be an overall reduction of archeological integrity at these sites, but not to the extent that the resources would become ineligible for listing in the National Register of Historic Places. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
Historic Character of Built Environment	<p>The No-Action Alternative would have minor to moderate long-term visual impacts on the prehistoric and CCC landscapes, and a long-term moderate, adverse impact on the CCC visitor center. There would be an overall reduction of integrity in the prehistoric and CCC landscapes, but not to the extent that they would no longer be eligible to be listed in the National Register of Historic Places. Any future alterations to the prehistoric, CCC or Mission 66 landscapes, in conjunction with the minor to moderate cumulative impacts of previous changes and this alternative, could result in moderate cumulative impacts to the prehistoric, CCC and Mission 66 landscapes. In addition to those mentioned, there would be other less severe impacts as a result of implementing this alternative.</p>	<p>Alternative 1 would have long-term moderate, adverse impacts on the prehistoric landscape and long-term moderate adverse impacts on the CCC/Mission 66 visitor center. There would be an overall reduction of historic integrity of the prehistoric landscape and the CCC/Mission 66 visitor center, but not to the extent that they would no longer be potentially eligible to be listed in the National Register of Historic Places. Any future alterations to the prehistoric landscape or the visitor center, in conjunction with the moderate, adverse cumulative impacts of previous changes and this alternative could result in moderate, adverse cumulative impacts to the prehistoric landscape and the CCC/Mission 66 visitor center. In addition to those mentioned, there would be other less severe impacts as a result of implementing this alternative.</p>	<p>Alternative 2 would have long-term moderate adverse impacts on the prehistoric landscape, the ranger cabin landscape, and the Mission 66 landscape. However, this alternative would also have long-term major benefit to the prehistoric landscape by removing the Mission 66 portion of the visitor center and reducing the visual impact to the prehistoric canyon landscape. There would also be a long-term major benefit to the CCC visitor center by returning the developed area to a more intimate, rustic setting. There would, however, be an overall reduction of historic integrity in the landscapes (prehistoric, ranger cabin, CCC and Mission 66), but not to the extent that they would no longer be eligible to be listed in the National Register of Historic Places. Any future alterations of the landscapes, in conjunction with the adverse cumulative impacts of previous changes and the preferred alternative, could result in major, adverse cumulative impacts to each landscape. In addition to those mentioned, there would be other less severe impacts as a result of implementing this alternative.</p>

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
Ethnographic Resources	The No-Action Alternative would perpetuate any current and ongoing moderate to major effects to ethnographic resources, both adverse and beneficial, including vandalism from visitor access, limitation of access by tribe members to culturally significant resources or places for traditional cultural purposes, both adverse effects, and a beneficial effect as a result of improving and correcting interpretive media about tribal histories and cultural values, with the involvement of associated tribes. In addition to those mentioned, there would be other less severe effects of implementing this alternative.	The effects of Alternative 1 would be both adverse and beneficial, depending on the degree of tribal involvement in park planning. The increased impacts to archeological sites as a result of building new facilities and allowing increased visitation to numerous additional sites would also constitute a major impairment to ethnographic resources. In addition to those mentioned, there would be other less severe effects of implementing this alternative.	Overall, the preferred alternative would have beneficial effects on ethnographic resources. Some adverse effects, associated with archeological resources, would remain. Further consultation with the tribes may reveal that the impacts to archeological resources from this alternative are moderate, rather than major, and therefore, the potential impacts identified may not constitute an impairment to ethnographic resources. In addition to those mentioned, there would be other less severe effects of implementing this alternative.
Natural Systems and Processes	Current management of Walnut Canyon National Monument ensures natural systems and processes would be sustained with relatively few long-term adverse environmental impacts, except for those that are attributable to increasing visitation, historic land use, and regional watershed, airshed, and ecosystem degradation. Soils, ephemeral drainage systems, vegetation, and wildlife are	Under Alternative 1, natural systems within Walnut Canyon National Monument would continue to recover from historic land use. Continued NPS operations and visitor activities around the existing Visitor Center-Island Trail area would have similar impacts to those identified for the No-Action Alternative. The proposed new visitor activities within the Extended Learning, Guided	Under Alternative 2, natural systems and processes within Walnut Canyon National Monument would continue recovering from historic land use. The impacts of continuing daytime use of the existing entrance road, NPS operations, and visitor activities around the Visitor Center-Island Trail area would be similar to the No-Action Alternative. The entire entrance road would be gated at

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>generally stable, and inherent biodiversity is relatively intact. The NPS would manage for the continued recovery of natural systems from historic land uses. Non-native plant species have the potential to invade large areas of the monument if not managed, resulting in minor to moderate adverse impacts on natural systems and processes.</p> <p>NPS operations and visitor activities are causing long-term, negligible to minor adverse impacts around interpretive areas and support facilities within the north-central canyon rim area. Continued use of the entrance road would have negligible to long-term, minor adverse impacts to natural systems, with a greater degree of adverse impact to wildlife. Most of the pre-1996 area within the monument is closed to the general public to protect sensitive resources, which ensures the long-term integrity of natural systems and processes. The exclusion of motor vehicles and livestock grazing within the 1996 boundary expansion area would have long-term, moderate beneficial impacts to natural</p>	<p>Adventure, and Natural Area Recreation Zones would locally increase unplanned trail segments, soil compaction, vegetation trampling, erosion, spread of nonnative plants, and noise disturbance to wildlife. Sustained daytime human presence and traffic noise along most of the north canyon rim would have long-term, moderate adverse impacts to at least some wildlife species within the narrow canyon below. The area impacted by NPS facilities and frequent visitor use would increase from 5% to an estimated 20% of the total area within the monument. The remaining area would be formally recognized as a Resource Preservation Zone, and closed to general access. This would have long-term, moderate beneficial impacts to natural systems and processes. The new road system, trail corridors, and dispersed hiking across the entire north canyon rim would cumulatively magnify impacts to natural systems and processes within the adjacent inner canyon environment, particularly to</p>	<p>night, resulting in long-term, minor beneficial impacts to wildlife. A new visitor center and parking area would be built near I-40 at the park entrance, which would locally impact vegetation, wildlife habitat, soils, and drainage patterns. The new facilities would reduce visitor crowding and traffic congestion at the current Visitor Center, reducing long-term adverse impacts to natural systems along the north-central canyon rim. Visitor activity would expand into the Ranger Cabin area west of the Visitor Center, which has long been closed to general visitor access. Increased visitation in this area would have long-term, minor adverse impacts on natural systems and processes. A primitive road would be improved to the northeast canyon rim, and a staging area would be developed for guided hiking in the eastern canyon. This would require localized removal of vegetation and wildlife habitat, and localized disturbance to soils and drainage patterns. The proposed access improvements</p>

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>systems and processes. New visitor facilities and visitor activities in the 1996 boundary expansion areas would not be master planned. Related impacts from unmanaged recreational use are unpredictable, but would likely be long-term, negligible to minor, adverse for soils, vegetation, and drainage function, and long-term minor to moderate for wildlife. The availability of the monument for public enjoyment might influence regional urban development around Flagstaff and cumulative impacts to regional natural systems, but these impacts are believed to be negligible and considerably offset by the value of the monument as a long-term conservation area. Under the No-Action Alternative, approximately 5% of the total monument area would remain impacted by visitor use and NPS support infrastructure. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>	<p>wildlife. In addition to those mentioned, there would be other less severe impacts as a result of implementing this alternative.</p>	<p>would have long-term, minor adverse impacts to most aspects of natural systems, except there could be long-term, moderate adverse impacts to less abundant wildlife that are currently restricted to more remote areas of Walnut Canyon. Guided hikes would infrequently be led within the eastern canyon area, with long-term, minor adverse impacts to most aspects of natural systems, but there could be long-term, moderate adverse impacts to some wildlife species that utilize the narrow riparian area along the eastern canyon floor. The area impacted by NPS facilities and visitor use would increase from 5% to an estimated 7%. The remaining area would be included in the Resource Preservation Zone, and closed to general access. This would have long-term, moderate beneficial impacts to natural systems and processes. Guided hikes in the eastern canyon area would influence natural systems and processes over an additional 18% of the total monument area within the Resource Preservation Zone. The expanded visitor</p>

Table 3: Summary of Major Impacts			
	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
			activities along the north central canyon rim together with the eastern canyon area would cumulatively magnify adverse impacts to wildlife that utilize the narrow canyon. The magnitude of cumulative effects would be less under Alternative 1. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.
Threatened, Endangered, and Sensitive Species	There are six threatened/sensitive plant species and six threatened/sensitive animal species that are either known or could potentially occur within the monument. Vegetation and wildlife habitat would continue to recover from historic land uses. Monitoring programs are needed to routinely assess the distribution and status of sensitive species, and to ensure they are not impacted by visitor use and NPS operations. Approximately 95% of the area within the monument remains closed to general public access. The backcountry closure effectively protects most sensitive plant and animal species habitat,	Under Alternative 1, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Proposed new facilities in proximity existing facilities in the north-central canyon area would likely have no adverse impacts to threatened, endangered, or sensitive species. The cumulative effect of proposed new road, trails, and dispersed hiking areas would result in sustained daytime human presence and increased ambient noise along most of the north canyon rim, which would cause a disturbance to sensitive wildlife species within the adjacent narrow canyon.	Under Alternative 2, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Continued NPS operations and visitor activities in the north-central canyon area would have negligible impacts to threatened, endangered, or sensitive species. The proposed new visitor center and parking area near I-40 are not in proximity to known sensitive species locations or preferred habitats, and would likely have negligible impacts to threatened, endangered, or sensitive species. Closure of the 1996 western boundary area to existing recreational activities

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>including all designated critical habitat for the Mexican spotted owl. Current NPS operations and visitor activities would remain concentrated in a relatively small area around the north-central canyon rim. No plant species of concern are known to occur within existing developed or visitor use areas, but <i>Hedeoma diffusum</i> occurs in nearby canyon rim habitat and experiences the greatest risk of impacts from current visitor use. Sensitive plant species that are restricted to riparian habitats may be experiencing long-term declines as a result of the creation of Upper and Lower Lake Mary, but long-term monitoring data would be needed to reliably assess trends. Other cumulative effects could result from exceeding visitor carrying capacity within the monument and from nearby development within the town of Flagstaff. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>	<p>Approximately 80% of the area within the monument area would be formally recognized as a Resource Preservation Zone, and unauthorized access would be prohibited. This would effectively preclude most disturbance to Mexican spotted owl critical habitat, riparian habitat within the canyon bottom, densely forested canyon terrain, and remote cliff faces. Under Alternative 1, sensitive species would be surveyed and monitored more intensively, and mitigating measures would be adopted to effectively protect them and their habitats within Walnut Canyon National Monument. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>	<p>would likely have beneficial impacts to sensitive wildlife species known to inhabit the western canyon area. Sensitive plant species within the proposed Extended Learning Zone, northeast canyon rim access road, and the Guided Adventure Zone in the east canyon area would be surveyed and avoided. Potential adverse impacts to sensitive wildlife species within the proposed Guided Adventure Zone in the eastern canyon area would be mitigated by continued closure of the monument at night, restricting visitor entry unless accompanied by NPS staff, monitoring for potential visitor use disturbance impacts, and establishing seasonal closures during breeding seasons. Approximately 93% of the area within the monument would be formally recognized as a Resource Preservation Zone, and unauthorized entry would be prohibited, effectively precluding most disturbance to critical habitat for the Mexican spotted owl. In addition to those mentioned, there would be other</p>

Table 3: Summary of Major Impacts			
	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
			less severe effects as a result of implementing this alternative.
Wetlands, Floodplains, and Riparian Resources	Under the No-Action Alternative, continued NPS operations and visitor uses would have negligible impacts to wetland, floodplain, and riparian resources within the Walnut Canyon watershed. Fencing the 1996 boundary expansion areas along the canyon floor and closing the area to the general public would likely have negligible impacts, and excluding livestock grazing from the eastern boundary expansion area would likely have long-term, minor to moderate beneficial impacts. The historic Santa Fe dam would likely have negligible impacts because most storm flows pass through the dam's spillway. The greatest impacts to wetland, floodplain, and riparian resources are attributable to cumulative impacts from up-stream impoundments of Walnut Creek at Upper and Lower Lake Mary. Stream geomorphic processes, localized wetlands, and riparian vegetation would continue to experience a long-term decline in response to the cessation of seasonal flows. A	Under Alternative 1, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No-Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those described for the No-Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No-Action Alternative. The proposed new facilities along the existing entrance road would be entirely within an upland environment and also would have negligible impacts to wetlands, floodplains, and riparian resources. Approximately 2 miles of road would be built along the northeast canyon rim and would cross tributary drainages of Walnut Canyon. Frequent vehicle use along the new road could potentially introduce trace amounts of non-point source pollution from motor and exhaust residue into the Walnut	Under Alternative 2, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No-Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those identified for the No-Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No-Action Alternative. The proposed new visitor center along the existing entrance road would be entirely within an upland environment and also would have negligible impacts to wetlands, floodplains, or riparian resources. An existing primitive road would be upgraded to provide visitor access to the northeast canyon rim. The road would be properly designed to minimize drainage interference, would be used infrequently, and non-point source pollution from motor and exhaust residue would be minimal. The proposed road

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>few obligate wetland and riparian plant species might become extirpated from the monument. The impoundments have also altered flood stages and floodplain areas, and a dam failure would cause catastrophic damage to riparian resources within the monument. Continued disruption of flows within the watershed would have long-term, moderate adverse cumulative impacts to wetland, floodplain, and riparian resources within the monument. Riparian resources within the Walnut Canyon watershed would remain buffered from water quality degradation by surrounding undeveloped forest lands. Much of the land within the watershed could eventually be acquired for development by the city of Flagstaff. This would increase non-point source pollution, and have long-term, minor to moderate adverse cumulative impacts to riparian and wetland resources within Walnut Canyon National Monument. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>	<p>Canyon watershed. The proposed road would likely have negligible to long-term, minor adverse impacts on riparian resources. Dispersed guided hiking would occur in 1/2 mile of riparian corridor along the east canyon floor, increasing disturbance to stream banks, terraces, and riparian vegetation. This impact would probably be offset by fencing the 1996 boundary to exclude livestock grazing. Visitor use within this area would likely result in negligible to long-term, minor adverse impacts. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>	<p>would likely have negligible impacts. Dispersed hiking would occur in 2 miles of riparian corridor along the east canyon floor, increasing disturbance to stream banks, terraces, and riparian vegetation. This impact would probably be offset by fencing the 1996 boundary to exclude livestock grazing. Visitor access within this area would likely result in negligible to long-term, minor adverse impacts. In addition to those mentioned, there would be other less severe effects as a result of implementing this alternative.</p>

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
Ability to Experience Park Resources	<p>The No-Action Alternative would result in moderate benefits for many visitors, particularly those with an interest in cliff dwellings and with the physical ability to walk to them. Recently improved access to the visitor center and its resources represents a major benefit for visitors with physical disabilities and those wishing to examine exhibits and artifacts. Continuation of traditional interpretive programs would provide moderate benefits for all visitors in understanding of park resources and their significance. The ability to enjoy the scenery and a minimally altered environment, and to do so in a relatively quiet, uncrowded atmosphere, would continue as a moderate benefit in the near future, but would be increasingly impacted by expected visitation increases in the future. This alternative would result in minor adverse impacts to visitor experience by continuing to limit access to the full range of park resources, including the opportunity to visit prehistoric sites other than cliff dwellings. Visitors with disabilities would</p>	<p>Alternative 1 would result in major benefits to visitors wishing to experience a greater variety of park resources than are available under the No-Action Alternative. Removal of offices from the visitor center would alleviate crowding and create space for new expanded museum exhibits, artifact displays, and indoor interpretive programs for visitors and organized school groups-all major benefits for visitor understanding and viewing of the "real thing." Remodeling of the visitor center would also provide major benefits in accessibility: physical barriers (multiple building levels and stairs) would be resolved to provide full accessibility and exhibits would be designed for use by visitors with a variety of physical and mental impairments. A new scenic drive would provide views of additional cliff dwellings and other types of structures, some relatively undisturbed, which are not available under the No-Action Alternative. This experience would be accessible. Removal of the busy parking lot from the canyon rim and</p>	<p>Alternative 2 would result in moderate benefits to visitors wanting a quieter, more educational experience at Walnut Canyon. The visitor center function would be relocated near the I-40 junction; the existing building would be restored to its original Civilian Conservation Corps (CCC) configuration. This would reduce intrusion of modern structures on the natural and historic scene and enhance views from the rim and from the Island Trail. Other benefits would include ability to hear natural sounds, see a minimally altered environment, and enjoy a less crowded experience throughout the park. The new visitor center would provide space for new museum exhibits, artifact displays, cultural demonstrations, and indoor interpretive programs for visitors and organized school groups. Traditional interpretive programs would continue, and new longer guided tours and hikes would be added to provide moderate benefits. A greater variety of natural and archeological resources would be</p>

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>suffer moderate adverse impacts due to continued inaccessibility of most structures and other resources related to park significance. Some visitors will experience minor to moderate adverse impacts from the lack of opportunity to explore beyond the limited developed area now available for public use. In addition to those mentioned, there would be other less severe impacts as a result of implementing this alternative.</p>	<p>spreading out use along the rim would create a less crowded visitor experience and enhance the ability to hear natural sounds, both moderate benefits. Because all visitors would no longer be confined to the existing developed area, there would be opportunities to experience new scenic views of Walnut Canyon and to enjoy a minimally altered environment, both moderate benefits. Traditional interpretive programs and cultural demonstrations would continue (a moderate benefit), together with new guided tours of the scenic drive and hike to First Fort. This alternative would result in moderate short-term adverse impacts to several aspects of visitor experience during construction and remodeling of the existing developed area, but these would be short term. There would be minor to moderate impacts to personal freedoms and traditional recreational activities resulting from zoning of newly acquired lands and removal of some uses from the park. These impacts would be</p>	<p>available via guided tours and/or self-guided trails. These would include the canyon floor, First Fort, the ranger cabin, and other dwellings, in addition to those available under the No-Action Alternative, and would constitute a moderate to major benefit. The new visitor center and its exhibits would be fully accessible to visitors with a variety of physical and mental impairments, and would provide equivalent experiences for resources which, because of canyon terrain, cannot be made accessible. More features would be accessible than under the No-Action Alternative: the Rim Trail would be improved to provide access at least to the pithouse and pueblo, and a self-guiding trail to the historic ranger cabin would be accessible. These would be moderate benefits. Ranger-led walks to First Fort and into the canyon, however, could not be made accessible. This alternative would result in major adverse impacts to several aspects of visitor experience during construction and remodeling in the existing</p>

Table 3: Summary of Major Impacts			
	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
		partially mitigated by increased on-site information on regional recreational opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	developed area, but these would be short-term. This alternative would consider reservation and/or shuttle systems if necessary to control visitation numbers. Moderate adverse impacts on personal freedoms could result if such systems were implemented. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.
Park Neighbors	Within existing conditions, the management actions of the NPS would provide many beneficial impacts to other agencies, neighbors, and American Indian tribes in terms of cooperative resources management, planning, and visitor uses. Existing conditions would result in only minor impacts to the workload of others in terms of additional administrative tasks, interpretive planning, agreement reviews, and joint planning/management efforts. Growth and development of the city of Flagstaff would create moderate, long-term, adverse impacts to other land and resource managers and	Management actions in Alternative 1 would provide benefits to other agencies, neighbors, and American Indian tribes in terms of cooperative resources management, planning, visitor uses, and access to traditional cultural resources. There would be only minor impacts to the workload of others in terms of additional administrative tasks, interpretive planning, agreement reviews, and joint planning/management efforts. Growth and development of the city of Flagstaff would create moderate, long-term, adverse impacts to other land and resource managers and neighbors, in terms of additional	The loss of access to new lands on the west side of the monument would create moderate long-term adverse impacts to traditional neighborhood uses of that area. The elimination and relocation of the climbing area in the monument would have minor long-term adverse impacts to a very few individuals. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Table 3: Summary of Major Impacts

	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	neighbors, in terms of additional workloads and loss of recreational areas and opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	workloads and loss of recreational areas and opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	
Operational Efficiency	The No-Action Alternative would result in no substantial change in the operations of the park. The effects of implementing the No-Action Alternative would be minor to moderate. Most of the major roads providing access to the park would likely see an increase in visitor and commuter traffic, which would result in additional congestion and a likely increase in accidents. Maintenance needs would increase. Increased use of all roads leading to the park would compound the difficulties that already exist in protecting park resources, including entry to areas of the park that are closed to visitation and intentional and unintentional damage to archeological resources. The effects to facilities, utilities, and staffing would be minor to moderate. Without improvement	Implementation of Alternative 1 would have a long-term beneficial impact on operational efficiency. There would be major, short-term impacts resulting from the construction of a new visitor center and parking lot, rehabilitation of the old visitor center, construction associated with the road to First Fort, and access and trail improvements necessary for the increased visitor uses on the western and eastern portions of the park. However, following construction, there would remain only minor to moderate impacts on operational efficiency. Most impacts would be in the form of increased maintenance needs for facilities and trail systems and increased resource protection and preservation needs. This alternative would not fully address the inadequacies with	Alternative 2 would have a long-term beneficial effect on operational efficiency. There would be major, short-term adverse impacts resulting from the proposed construction of a new administrative building and parking lot, and existing visitor center rehabilitation. However, following construction and rehabilitation, there would be only minor to moderate adverse impacts on operational efficiency. Most impacts would occur in the form of increased maintenance requirements for facilities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

ALTERNATIVES

Table 3: Summary of Major Impacts			
	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	to the facilities or utilities, conditions would worsen. Limitations on current staff levels inhibit the park's ability to provide adequate levels of resource protection and preservation, maintenance of existing facilities, and visitor services. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	the existing visitor center and parking lot; however, it should improve the work environment for the park staff. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.	

Table 4: Objectives Met by Alternatives

Objective	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
<p>1. Maximize Protection of Cultural Resources</p>	<p>Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night. The monument boundary was expanded in 1996 to include approximately 1,300 additional acres. Areas not designated and identified for public activities are closed to unguided entry.</p>	<p>The park road would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303. Parking and orientation would be redesigned and relocated away from the canyon rim. New wayside exhibits at the I-40 pullout/turnaround would better orient and prepare park visitors before they encounter park resources. Areas of the park not zoned for administrative or visitor use would be closed to protect resources.</p>	<p>The existing entrance road and parking area would be retained and used as they are now unless crowding increases to the point that resources are degraded. Then actions would be taken to control visitor numbers. Three gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road. A new visitor center and parking area would be built near I-40 at the park entrance, to orient visitors before they encounter park resources. The modern additions to the existing historic CCC- constructed visitor center would be removed, making the building less visible on the rim and restoring the small, intimate nature of the historic structure. Areas of the park not zoned for visitor or administrative uses would be closed to protect resources.</p>
<p>2. Maximize Protection of Natural Resources</p>	<p>Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night. The</p>	<p>The park road would remain day-use only, with the road gated at night at the intersection of the entrance</p>	<p>The existing entrance road and parking area would be retained and used as they are now unless crowding increased to</p>

Table 4: Objectives Met by Alternatives

Objective	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>monument boundary was expanded in 1996 to include approximately 1,300 additional acres. Areas not designated and identified for public activities are closed to unguided entry.</p>	<p>road and FR303. Parking and orientation would be redesigned and relocated away from the canyon rim. New wayside exhibits at the I-40 pullout/turnaround would better orient and prepare park visitors before they encounter park resources. Areas of the park not zoned for administrative or visitor use would be closed to protect resources.</p>	<p>the point that resources are degraded. Then actions would be taken to control visitor numbers. Three gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road.</p> <p>A new visitor center and parking area would be built near I-40 at the park entrance, to orient visitors before they encounter park resources. Areas of the park not zoned for visitor or administrative uses would be closed to protect resources.</p>
<p>3. Expand Diversity of Visitor Experience</p>	<p>Orientation and interpretation are accomplished primarily through the visitor center and the self-guided Island and Rim Trails. Various interpretive programs, including guided hikes to the historic ranger cabin and additional cliff dwellings, are offered as staffing permits. Access is limited to established trails, roadways, and developed facilities.</p>	<p>The existing entrance road and picnic areas would remain, but parking and orientation would be redesigned and relocated away from the canyon rim. New wayside exhibits at the I-40 pullout/turnaround would better orient and prepare park visitors before they encounter park resources. The existing visitor center would be remodeled to allow more space for visitor orientation, new exhibits, and group presentations. An existing primitive road would be</p>	<p>The existing entrance road and parking area would be retained and used as they are now unless crowding increased to the point that visitor experiences are degraded. Then actions would be taken to control visitor numbers. A new visitor center and parking area would be built near I-40 at the park entrance, to orient visitors before they encounter park resources. The CCC portion of the visitor center would be adaptively used for both trailhead and canyon</p>

Table 4: Objectives Met by Alternatives

Objective	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
		<p>substantially upgraded to provide a new scenic drive along the north rim. Initially, this would be a semiprimitive guided experience until improvements to existing dirt roads could be accomplished. Additional orientation media would be installed at the new parking area near the existing visitor center to alter visitors to the diverse experiences available (walking, driving, biking, guided hikes). In addition to the existing visitor center, self-guided trails and ranger-led hikes, guided access to the recently acquired First Fort archeological area would be possible via the new rim road. Additional guided activities would occur in areas of the north rim. Interpretation and new wayside exhibits along the entrance and rim roads would provide the opportunity to learn about different aspects of the park and its place in the regional story. Hiking, biking, and horseback riding would occur on existing roads and trails on the rim, in the western portions of the newly acquired land.</p>	<p>orientation and as an educational center for in-depth learning opportunities, such as ranger talks, special events, workshops, seminars, and demonstrations. Within the Extended Learning Zone, self-guided trails and ranger-led activities in the vicinity of the current visitor center would remain as they are now. The potential exists to develop self-guided activities using existing primitive roads to the ranger cabin area. Efforts would be made through development of new media to provide a broader range of educational and interpretive programs aimed at in-depth learning. Some of these experiences would be provided through partnerships with affiliated tribes, organizations, institutions, and/or other agencies. Visitors would have access to the eastern end of the park via ranger-guided hikes.</p>

Table 4: Objectives Met by Alternatives

Objective	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
<p>4. Limit Effect on Neighbors</p>	<p>Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night. FR303 and other U.S. Forest Service roads allow ungated, 24-hour access to USFS lands surrounding the monument.</p>	<p>The park road would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303.</p>	<p>The existing entrance road and parking area would be retained and used as they are now unless crowding increases to the point that visitor experience and/or resources are degraded. Then actions would be taken to control visitor number (such as a shuttle system). Three gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road while allowing 24-hour use of FR303. An existing USFS road would be upgraded to accommodate ranger-guided hikes in the eastern end of the monument. A parking lot would be established within the monument from which the guided hikes would be staged. Hiking, biking, and horseback riding would be directed to nearby forest lands, where such experiences are already available.</p>
<p>5. Improve Operational Efficiency</p>	<p>The NPS and USFS work cooperatively in the areas of law enforcement, wildland fire, resource protection and management, interpretation,</p>	<p>The park would remain day-use only, with the road gated at night at the intersection of the entrance road and FR303. Offices would be removed from</p>	<p>A new fully accessible visitor center and parking area would be built near I-40 at the park entrance, to orient visitors and to collect entrance fees. Three</p>

Table 4: Objectives Met by Alternatives

Objective	No-Action Alternative: Existing Conditions	Alternative 1: Diversify Opportunities for Visitor Use	Alternative 2 (Preferred): Emphasize Preservation
	<p>and facility management. Walnut Canyon is operated as a day-use area, and the visitor center parking area is closed and gated at night.</p>	<p>the visitor center. New administrative offices would be constructed near the new parking lot. A new pullout and/or turn around would be constructed near the I-40 exit, and might include an entrance/fee collection facility.</p>	<p>gates would be located along the entrance road: one near the I-40 exit and one on each side of FR303, to eliminate after-hours access to the monument road. Some visitor experiences would be provided through partnerships with affiliated tribes, organizations, institutions, and/or other agencies. An existing USFS road would be upgraded and used administratively to facilitate ranger-guided hikes in the eastern end of the monument. A parking area would be established in the monument from which guided hikes would be staged.</p>

AFFECTED ENVIRONMENT

LONG-TERM INTEGRITY OF ARCHEOLOGICAL RESOURCES

Impact topics were identified through the scoping process. Concerns covered by this section include maintaining the long-term scientific integrity and culturally sensitive values of archeological sites, including prehistoric and historic architecture, shrines, cultural modified landforms, agricultural field systems, rock art, and other cultural features.

Region

The high arid Colorado Plateau region of the American Southwest is world-renowned for its abundant, well-preserved archeological resources. Archeological remains in the region reflect several distinct lifeways and adaptive strategies, including hunting and gathering, horticulture, livestock grazing, and, after the mid-19th century, participation in the Euro-American global economy.

The forested area surrounding Walnut Canyon National Monument contains hundreds of archeological sites. A few of these sites date to the late Archaic period, ca. 2500 B.C.- A.D. 1, but most of the sites and associated artifacts are the tangible remains of a prehistoric farming culture that flourished in the Flagstaff region from about A.D. 600 until 1400. Archeologists call this culture "Sinagua," in reference to the early Spanish name for this highland region, "Sierra Sinagua" (Mountain Range without Water).

Scattered Sinagua families cultivated the upland areas around Walnut Canyon for centuries, growing small gardens of corn, squash, and beans. Early settlers lived in subterranean pit structures, but by the early 1100s, most habitations included at least

some aboveground structures. During the 1100s in the Walnut Canyon area, there was also a notable shift toward living in cliff alcoves. By the mid-1100s, a large segment of the local Sinagua population had moved into limestone alcoves below the canyon rim, where they constructed substantial dwellings with locally available stone and clay. Growing crops at scattered plots in the surrounding forest, raising children, making stone tools and other implements, and following the ancient ceremonial cycles that had been passed down for generations, the Walnut Canyon community thrived for about 150 years.

Population in the Flagstaff region peaked in the mid-1100s through early 1200s, coincident with the peak occupation of Walnut Canyon, but it declined precipitously in the following century. By the early 1300s, the Sinagua had moved out of Walnut Canyon, presumably to Anderson Mesa or points farther south and east, although their Pueblo descendants continued to visit the area for hunting, gathering, and ceremonial purposes. During the following centuries, the area around Walnut Canyon was also visited by ancestors of the Yavapai and Havasupai, and after the 1700s by Apache and Navajo, for seasonal hunting and gathering.

Today, Walnut Canyon preserves a portion of the once extensive Sinagua cultural landscape. Multiroom residential sites (both cliff dwellings and open-air pueblos), isolated field structures, "forts," quarries, agricultural fields, check dams, shrines, rock art, and other features are now protected within the monument.

Park

Walnut Canyon National Monument on the southern edge of the Colorado Plateau was

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specifically created to preserve and interpret some exceptional prehistoric archeological sites. The primary archeological remains of Walnut Canyon are unique, in that the monument preserves the only known concentration of northern Sinagua cliff dwellings in the region. These well-preserved architectural sites, situated in alcoves below the canyon rim, were constructed by the Sinagua primarily between A.D. 1100 and A.D. 1250. In addition, this monument contains a representative cross section of the types and variety of archeological sites found throughout the Four Corners area, including small and large masonry pueblos, rock shelters, open campsites, agricultural field systems, ceremonial shrines, historic cabins, rock art panels, miscellaneous artifact scatters, and a variety of other physical remains reflecting the diverse cultures and economic strategies of the various people who have attempted to make a living in this beautiful yet challenging environment.

The site density in the monument averages almost 100 sites per square mile, compared with typical densities of 40 sites per square mile in other areas of the ponderosa pine forest near Flagstaff. The high site density in Walnut Canyon reflects the area's biological richness. The canyon's natural abundance and diversity of plant and animal species provided a storehouse of resources that attracted and sustained the prehistoric inhabitants of Walnut Canyon.

About 45 percent of the approximately 3,600 acres in Walnut Canyon National Monument have been intensively inventoried for archeological resources. All of the inventoried areas are within the old (pre- 1996) boundaries of the monument. Areas that have been specifically inventoried for archeological resources include the fence line along the entrance road, the north and south rim areas, plus approximately half of the inner canyon

zone. None of the private inholding (approximately 291 acres), or any of the new lands added to the monument in 1996, have been surveyed for archeological resources. A total of 251 archeological sites have been recorded within the inventoried areas. Of this total, 87 are classified as cliff dwellings. In addition, the monument includes 5 "forts" (walled, defensible sites located on promontories within the canyon), 5 lithic scatters, 87 one- and two- room field houses (some with associated field complexes), 18 pithouses, and 11 multiroom pueblos. Several historic sites (a cabin, a dam, plus several trash dumps) are also present in the monument.

The dense concentration of prehistoric ruins, their exceptional state of preservation, and their unusual and highly scenic setting in sheltered alcoves along the canyon walls, coupled with the threat of imminent destruction by commercial looters and misguided tourists, were key factors influencing the creation of Walnut Canyon National Monument in 1915. These original core values persist to the present day. Approximately 40 of the 251 archeological sites in the monument have been stabilized to some degree, in order to withstand impacts from visitation and weathering, but many still retain a high degree of integrity, including substantial amounts of original masonry architecture and a more or less complete assemblage of artifacts.

HISTORIC CHARACTER OF THE BUILT ENVIRONMENT

Region

The historic built environment of the region has been shaped, like many small Western towns, by timber, cattle grazing, and the mining industry (Cline 1994). A few grand homes survive in the area, which were constructed by Flagstaff's first

entrepreneurs of the late 19th century. The majority of structures built during Flagstaff's early days represent the working class. Areas like Milton (mill town) housed mill workers and their families (Cline 1976).

Science and education also shaped the historic built environment of the region. In 1894 Flagstaff was chosen as the site for Lowell Observatory, and in 1899 Northern Arizona Normal School (now Northern Arizona University) opened as a preparatory school for teachers.

The Civilian Conservation Corps (CCC) added much to the region, constructing roads, trails, fences, phone lines, and a golf course clubhouse in Flagstaff (Cline 1994).

The landscapes of the region are many and span great lengths of time. Landscapes from the prehistoric Sinagua culture overlap with other prehistoric groups, including the Kayenta Anasazi and Cohonina. Melded in this region are natural features and cultural elements shared by historic Navajo and Paiute groups, early cattle and sheep ranchers, and lumbermen.

Park

There are three historic periods of construction at Walnut Canyon National Monument. Visitors experience each of these episodes via interpretive guided walks or self-guided tours. Except for the ranger cabin, however, the structures are not interpreted specifically for their historic value.

The ranger cabin was constructed in 1904 as a ranger station/residence by the San Francisco Mountain Reserve (later the Coconino National Forest). The cabin remains intact but in poor condition. Associated with the cabin are overgrown garden beds, one fruit tree, an outbuilding, and a cistern. A fire lookout tree is some distance from the cabin. Remnants of early camps left by visitors and other forest users are still present throughout the monument.

The second era of major construction at the park is represented by rustic architecture constructed by the Civilian Conservation Corps (1938- 1940). A complex of buildings was constructed, including two ranger residences and an associated outbuilding, visitor center, and associated rest rooms. The Island Trail (primary interpretive area in the park) was constructed during this time. Each of the buildings was constructed from material quarried on-site- typical of rustic architecture that dominated NPS design in the 1930s and 1940s. A split rail fence was also constructed by the CCC to prevent cattle from straying into the park along FR303.

Walnut Canyon's CCC structures "reflect an architectural theme based on native materials and methods for construction and sometimes a cultural theme drawn from the region's pioneering or indigenous architecture" (McClelland 1998). Buildings were designed to fit with the natural character of the park. The visitor center and housing complex at Walnut Canyon reflect the desire for the buildings to harmonize with the surrounding environment.

The third era of major construction at Walnut Canyon was the Mission 66 program, during which two houses and an addition to the CCC visitor center were constructed. Exhibits in the visitor center were also developed during this period and have changed little since. In the mid- 1970s a peaked roof was added to the CCC and Mission 66 portions of the visitor center. In 1996 an addition was constructed to the Mission 66 portion to provide more room for cooperating association book sales.

The visitor center and houses constructed during the Mission 66 program represent an era of modern methods of landscape and architectural design. Well-known architect Cecil Doty designed the Mission 66 portion of the visitor center. It reflects the Mission 66 concept of open design, wide floor-to-

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ceiling windows, and light- controlled areas for displaying artifacts.

The majority of visitors to Walnut Canyon enter the Mission 66 portion of the visitor center and walk the nearby Rim and Island Trails. The visitor center and trails can be congested at times, and efforts have been made to modify the building to accommodate all visitors. Impacts (building additions, installation of wheelchair lifts) to the visitor center are the direct result of increasing numbers of visitors and the design limitations of the building. A general Service- wide moratorium has been placed on major changes to structures built during the NPS Mission 66 era, but in the Intermountain Region this has been modified to include review by a Mission 66 review board. Proposed changes are reviewed by the board, and a determination to proceed with construction can be granted, based upon criteria (e.g., the significance of the structure, how any character defining features of the structure would be affected, and whether or not the work would be done in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties). In addition, the eligibility of Mission 66 era structures for listing in the National Register of Historic Places can be determined by the review board prior to completion of the context study.

Cultural landscapes at Walnut Canyon have never been identified. A cultural landscape inventory (CLI) needs to be conducted to identify issues such as historic land uses and the location and character of significant resources. A CLI is needed to avoid adverse effects and/or loss of unidentified landscapes.

LONG-TERM INTEGRITY OF ETHNOGRAPHIC RESOURCES

NPS guidelines describe ethnographic resources as "variations of natural and

standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources 'ethnographic' depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways. When natural resources acquire meaning according to the different cultural constructs of a particular group, they become ethnographic and thus cultural resources as well" (NPS 1997).

Region

Walnut Canyon National Monument in north- central Arizona is part of a region lying between extensive high- altitude national forest lands to the southwest and semidesert mesas of the Hopi and Navajo Indian Reservations to the northeast. The latter forms the largest block of Indian tribal lands in the United States, including more than 25,000 square miles. These contemporary reservations are only a small portion of the customary lands occupied aboriginally and historically by the tribes, and to which the tribes retain deeply rooted traditional associations. The three Flagstaff Area monuments are an integral part of this larger traditional landscape. Many of the geographic features and natural and cultural resources identified by the tribes as culturally significant within the three monuments are historically or ceremonially interconnected with other landscape elements, geographic features, and archeological sites throughout the tribes' entire customary land bases. In addition to the Hopi and Navajo Tribes, who currently occupy the tribal lands adjacent to or near the monuments, many of the other tribes originally consulted early in the GMP planning process retain customary associations with many of the same resources and places throughout the region. A good literature- based overview of tribal

associations with the Flagstaff Area monuments and surrounding region can be found in Brandt (1997).

Park

As described in the Purpose and Need and Consultation/Coordination sections, NPS consulted with many tribes in identification of ethnographic resources. The Hopi, Zuni, and Navajo Tribes conducted field research, using culturally appropriate methods to identify ethnographic resources about which they might have concerns in the context of the GMP. Although tribal representatives identified those resources of particular concern, it should be stressed that the resources identified for this project are not necessarily all the ethnographic resources that exist in the park.

The Navajo Nation identified fourteen culturally significant plant species at Walnut Canyon, in addition to white clay, a culturally significant mineral. The Hopi Tribe and Pueblo of Zuni identified the archeological resources in Walnut Canyon, including pre- Columbian architectural remains and petroglyphs, as part of their traditional histories and contemporary cultural identities.

LONG-TERM INTEGRITY OF NATURAL SYSTEMS AND PROCESSES

Walnut Canyon National Monument is a very small natural area within a regional framework of lands that are primarily managed by the U.S. Forest Service for ecologically sustainable, multiple uses. Preserving the integrity of the monument's natural systems requires careful planning of NPS facilities and management of visitor activities within the monument, and close coordination with the Coconino National Forest to ensure the monument does not become ecologically isolated by overly intensive land use and/or other

developments on the surrounding natural lands. During the public and agency scoping process, a number of resource values were identified, including: protecting plant species diversity and the locally rich assemblage of plant communities; ensuring that Walnut Canyon continues to function as an important wildlife habitat area and movement corridor within the surrounding natural landscape; maintaining natural geomorphic and soil formation processes; restoring fire- adapted ponderosa pine stands above the canyon rim; maintaining naturally functioning drainage systems within the side canyons; maintaining the integrity of natural systems for ecological research; and excluding nonnative species. Additional information and impact analysis for threatened/ endangered/sensitive species and wetlands/floodplains/riparian resources is presented in separate sections below.

Region

Walnut Canyon National Monument is located along the southern margin of the Colorado Plateau biotic province. In the Mogollon highlands- Coconino Plateau region surrounding the monument, elevations vary from 2,400 feet above sea level at the bottom of the Grand Canyon, to 12,670 feet above sea level at the crest of the San Francisco Peaks. The region has been shaped by erosion to reveal geologic outcrops of red sandstone and white limestone. The area surrounding the monument is also characterized by an extensive volcanic field (the San Francisco Volcanic Field) with prevalent cinder cones and lava flows. The Painted Desert stretches east within the Little Colorado River Basin toward Petrified Forest National Park. Soil types also vary within the region, depending on whether they are derived from weathered limestone, sandstone, shale, or volcanic bedrock. Unique areas of relatively young, deep cinders are also present, where

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soils are still forming and vegetation is colonizing.

The regional climate varies tremendously with elevation above sea level. Walnut Canyon National Monument, at 6,900 feet elevation, receives approximately 20 inches of precipitation per year, and temperatures typically range from near 0 in winter to the mid- 90s in summer. Thirty miles to the northeast, the Little Colorado River Basin at 4,500 feet elevation typically receives fewer than 7 inches of precipitation per year. Winter daytime temperatures are typically 10 to 15 degrees warmer than in Flagstaff, and summer temperatures often exceed 100. Above 10,000 feet on the adjacent San Francisco Peaks, annual precipitation exceeds 40 inches, temperatures are considerably cooler, and the growing season is remarkably shorter.

The wide variety of geologic formations, landforms, elevation range, and climatic differences within a relatively small geographic area has contributed to a considerable diversity of vegetation. This diversity is exhibited by the range of plant communities from alpine tundra on top of the San Francisco Peaks to Mojave Desert shrublands on the lower slopes of the Grand Canyon. Within Walnut Canyon, Sunset Crater Volcano, and Wupatki National Monuments surrounding Flagstaff, one can observe many of the dominant vegetation types. Walnut Canyon contains a narrow stand of broadleaf deciduous forest along the bottom of the canyon, mixed-coniferous forest on north-facing slopes, and ponderosa pine forest and pinyon-juniper woodland above the canyon rim. Traveling a short distance to Sunset Crater Volcano, one passes through expansive ponderosa pine forest, high elevation meadows, and recent volcanic lava flows and cinder barrens. As one descends in elevation to Wupatki, juniper woodlands, Colorado Plateau grasslands, and Colorado Plateau desertshrub communities are

common. The highest elevations in the neighboring San Francisco Peaks harbor aspen groves, and spruce and fir forests.

Prehistoric, historic, and current land uses have undoubtedly played a major role in shaping the landscape of the area as well. In addition to relying heavily upon agricultural land use, prehistoric peoples used native plants and animals, and used fire to modify the environment. Regional Navajo shepherding dates to the period of Spanish settlement of the Southwestern United States. A number of tribes, including the Navajo and the Hopi, continue to use plants, animals, and other natural resources in the region.

Fire has played a major role in shaping the vegetation in the Southwestern United States. In the past, low-intensity, lightning-ignited fires frequently burned the forest understory to maintain open pine stands with diverse grass and wildflower cover between the trees. Fire suppression for more than a century has caused well-documented changes within forests and grasslands of the region. Tree densities have risen dramatically, and forests are now at risk from intensely hot, catastrophic fires.

Historic and modern influences, including logging, agriculture, cattle ranching, hunting, mining, fire suppression, community development, and road and utility construction have together greatly affected and fragmented regional natural systems and processes. Historical ranching activity and grazing pressure caused or contributed to a wide range of historic changes in ecosystems throughout the Southwestern United States, including: loss of grassland cover and plant species diversity; reduction or extirpation of grassland-dependent wildlife; extirpation or extinction of predators; accelerated soil erosion and gullying of ephemeral drainage systems; decreasing wildfire size and frequency; loss of cottonwood-willow

riparian vegetation, which has had significant adverse impacts to both migratory and breeding birds; and development of artificial water sources and alteration or elimination of natural surface waters for native plant and animal species; and the spread of nonnative species. Environmental changes may be more apparent at lower elevations, where there is a documented increase in desert vegetation and noxious plants. Ranching and cattle stocking rates are changing as a result of widespread concerns over these impacts. Even though many of the changes to regional natural systems are likely permanent, ranching activity is trending more toward long-term ecological sustainability within the region.

Juniper woodland has been rapidly expanding into grasslands during the last century, but the underlying causes are the subject of scientific debate. Many ecologists believe that cattle grazing, in combination with range-fire suppression, is favoring juniper encroachment into grasslands. Cattle remove much of the grass and forbs and enhance the ability of juniper seedlings to germinate and establish in what were once continuous grassland areas. Other scientists believe that we are witnessing a natural succession process in which junipers are returning to formerly occupied habitat. Prehistoric cultures certainly must have used any available wood sources for fuel and construction purposes. About 1,000 years ago, the Sunset Crater Volcano eruption deposited ash and cinder over 800 square miles, presumably denuding vegetation over a large area within the region. This area is still undergoing the processes of soil formation and vegetation re-establishment.

Modern landownership patterns and uses have also resulted in increased habitat fragmentation within the region. Fences, especially double-fenced highway rights-of-way, prevent the regional movement of

numerous wildlife species, including pronghorn antelope. Roads throughout the area serve as conduits for the spread of exotic weedy plants. The primary ongoing land uses on the Coconino National Forest include forest health restoration, hunting, firewood collecting, livestock grazing, camping, off-highway vehicle use, horseback riding, backpacking, and day-hiking. A large area of the region belongs to sovereign American Indian tribes. Their cultures are traditionally tied to their lands, but little information is generated or available to understand the environmental impacts of tribal land management.

Large areas of arid lands within Southwestern United States have been invaded by nonnative plant species. On the Colorado Plateau, much of the remaining grasslands have been extensively invaded by nonnative annual brome grasses, drastically altering natural fire regimes, displacing native perennial bunchgrasses, and reducing or eliminating forage or cover for grassland-dependent wildlife species. Riparian vegetation has been severely altered by tamarisk invasion, which has outcompeted most native cottonwood and willow stands, and particularly affected both migratory and breeding birds.

Park

Approximately six miles of Walnut Canyon are encompassed within the 3,600-acre area of the monument. The land surface ranges from 6,200 feet to 6,900 feet above sea level. The canyon trends from west to east, following the sinuous, entrenched meanders along the Walnut "Creek" drainage. It is typically 1/4 mile wide from north rim to south rim, 400 feet deep at the western (upstream) boundary, and 250 feet deep at the eastern (downstream) boundary. The canyon walls are nearly vertical slickrock throughout most of the monument. Above the canyon rims are level terraces. Three prominent tributary side

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canyons enter from the south side and another enters from the north side near the western monument boundary.

The geology of Walnut Canyon is not complex, and is described and mapped by Darton (1910), Vandiver (1936), and Benfer (1971). The canyon is eroded into sedimentary rock layers of the Kaibab Limestone and Coconino Sandstone formations. The drainage of Walnut Creek became entrenched in the canyon as the formations were locally uplifted along with the rest of the Colorado Plateau and Mogollon Rim. More recent volcanic events within the San Francisco Volcanic Field have influenced the drainage pattern of Walnut Canyon and surrounding canyons (Colton 1936).

Despite its relatively small area, Walnut Canyon National Monument harbors a rich flora and assemblage of vegetation types. Inventories of the flora of the pre- 1996 monument area have documented more than 400 species (Arnberger 1947, Spangle 1953, Joyce 1974, Jenkins et al. 1991, National Park Service 2001). The vegetation of the pre- 1996 monument area was surveyed and mapped in 1991 (Jenkins et al.). Surveys of riparian vegetation along the canyon bottom drainage were completed by Brian (1985) and Phillips (1990). In addition, a new vegetation classification map is being completed by the USGS Biological Resources Division (Thomas 2001). A study of plant macrofossils found in packrat middens determined to be 3,800 years old was completed by Murdock (1994). A study reconstructing the forest vegetation circa 1880 for the north canyon rim area was completed by Menzel (1996). Land use histories are summarized in Bremer (1988) and Menzel (1996). Studies of the fire history within the monument are available for ponderosa pine forest (Davis 1985, Swetnam et al. 1990) and pinyon- juniper woodland (Despain and Mosley 1990). In addition, a network of vegetation study

plots has been installed to assess the effects of prescribed burning (Schon 2000). The NPS Inventory and Monitoring Program is completing new surveys for vascular plants and vertebrates, and is developing a long-term monitoring program to assess ecological health within the monument.

The monument area is dominated by coniferous forest and woodland vegetation. The north- facing canyon slopes and tributary canyons are more shaded and moist, and are dominated by Douglas fir- Gambel oak forest. The south- facing slopes are more arid, and dominated by pinyon and juniper trees, a diverse array of shrubs and herbaceous species, and even cacti and succulents. The narrow canyon floor harbors a strand of riparian vegetation dominated by broadleaf deciduous trees, conifers, and shrubs. The western (upslope) terraces above the canyon rim are dominated by ponderosa pine forest. The eastern (downslope) end of the canyon is more arid, and ponderosa trees give way to pinyon- juniper woodland and open grassland. The eastern canyon is also more shallow and broad. The slopes are dominated by open pinyon and juniper woodland, which is more closed with some small patches of mixed ponderosa in the north- facing ravines. A narrow strand of cottonwood and ponderosa runs along the intermittent drainage channel on the canyon floor. During the 1960's pinyon and juniper both sides of the rim were cleared by chaining with bulldozers to improve range conditions. The understory in the east canyon is dominated by rabbitbrush, snakeweed, grasses, and forbs.

For a relatively small area, Walnut Canyon National Monument also harbors a rich assemblage of wildlife habitats. Checklists have been prepared for mammals (Salomonson 1973) and birds (Grater 1935, Wetherill 1937, Spangle and Spangle 1954, Haldeman and Clark 1969). Scientific surveys of the canyon fauna are generally

lacking, but observation records confirm that much of the inherent faunal diversity of the canyon is intact. Wildlife habitats and migration corridors have remained relatively undisturbed under historic regional management conditions. This is largely attributed to the ruggedness of the canyon terrain, heavy vegetative cover, and reliable surface waters. The long-term closure of the backcountry area within the monument has also minimized human presence and noise disturbance to a wide variety of wildlife species.

Observations by the NPS, Arizona Game and Fish Department, and U.S. Forest Service confirm that Walnut Canyon is a locally important wildlife habitat area and movement corridor for elk, mule deer, black bear and wild turkey. A small number of American pronghorn inhabit Coconino National Forest lands adjacent to the northeastern and southeastern boundary of the monument. Mountain lions are also year round residents of the canyon. The steep terrain and secluded side canyons provide favorable habitat for numerous raptor species, including Cooper's hawk, sharp-shinned hawk, red-tailed hawk, golden eagle, prairie falcon, flammulated owl, and great horned owl. In addition, the Mexican spotted owl, peregrine falcon, and northern goshawk, among the rarest of raptor species in the Southwestern United States, are residents of Walnut Canyon. All of these wildlife species have breeding territories, home ranges, and/or seasonal ranges that span the monument boundary onto surrounding lands.

The canyon's natural system and processes were no doubt heavily influenced by the Sinagua Culture until they abandoned the area during the 13th century. During historic time, vegetation and wildlife within the Walnut Canyon watershed have been heavily influenced by logging and timber management, livestock grazing, wildfire suppression, game hunting, and predator

control. The northwestern boundary of the monument is surrounded by a "checkerboard" pattern of sections of Coconino National Forest and Arizona State lands, while the southern boundary is dominated by the Coconino National Forest. The easily accessible forests adjacent to the north canyon rim were heavily cut over between 1880 and 1925, and a series of salvage cuts was conducted during the 1960s. The terrain south of the canyon rim is much less accessible and was not extensively logged until the 1970s. Livestock grazing continued within the monument on the canyon rim areas until the boundary was fenced in 1973. Cattle grazing continues within the Walnut Canyon watershed in several range allotments on the surrounding Coconino National Forest. U.S. Forest Service range trend data for some of the surrounding allotment pastures show conditions have mostly been stable to improving since the 1960's. Current areas of concern include range conditions to the northeast and southeast of the monument, and areas where woodland and shrublands have moved into former grasslands around Anderson Mesa.

The adjacent Coconino National Forest lands, which until recently also included the 1996 boundary expansion areas, are managed according to the Coconino National Forest Land Use and Resource Management Plan. Predominant uses include hunting, livestock grazing, camping, day-hiking, all-terrain-biking, horseback riding, and backpacking. Isolated incidents of off-road driving, wildlife poaching, firewood cutting, trash dumping, and other resource damage have occurred along the monument boundary.

Fire history and presettlement forest reconstruction studies have shown that the ponderosa pine forest along the north rim has changed considerably during the last century. Prior to 1890, the north rim forest experienced a fire every 4 to 8 years, and the

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forest was composed of fewer, larger pine trees clustered in isolated stands with an open understory of diverse grasses, wildflowers, and forbs. Today, as a result of logging the old-growth trees, aggressive wildfire suppression, and loss of the herbaceous understory due to grazing, the forest is dominated by numerous younger, smaller trees and a mid-story of woodland species such as Gambel oak, pinyon, and juniper. The dense pine and woodland canopy is shading out the understory flora, and heavy loads of leaf litter and downed wood are accumulating. Beginning in 1990, the NPS implemented a prescribed fire program to reduce thickets of young ponderosa pine trees on the canyon rim terraces. Preliminary results from fire effects monitoring plots show effective reductions in ponderosa seedlings and saplings, junipers, deadwood, and the ground litter layer. The program was implemented under a series of fire management plans. The recently completed Fire Management Plan for the monument proposes to continue to manage the ponderosa stands with prescribed fire.

Except for the documented vegetation changes, NPS management of Walnut Canyon National Monument has generally favored the long-term protection of natural systems and processes. Less than 5% of the monument's approximately 3,600 acres is currently affected by fences, roads, buildings, utilities, trails, and visitor activities. Visitor use areas and NPS support facilities are located on the north-central canyon rim. The entrance road generally lies outside of the main canyon drainage area, and was designed to minimize interference with local drainage patterns. The road is used mostly during the day while the monument is open to the public, resulting in some traffic and noise disturbance to wildlife. Nighttime use is much more limited, but nevertheless increases the risk of mortality to wildlife, and animals are

occasionally killed crossing the road. Visitor use and NPS operation impacts are primarily concentrated around the visitor center and parking area, the Rim Trail, and "Island" Trail, and include localized vegetation trampling, soil compaction, unplanned trail segments, minor disruption of drainage patterns, increased noise, and disturbance to wildlife. The eastern boundary fence has been modified to accommodate seasonal movements by wildlife, including pronghorn and elk.

Most of the pre-1996 monument area has long been closed to public access to protect sensitive cultural resources. NPS administrative activities within the backcountry areas include resource protection patrols, resource inventory and monitoring, archeological site preservation, fire management, research, and limited educational activities under special use permits. Occasional unauthorized hiking occurs within the closed area, which is likely to continue because there is insufficient staff to ensure frequent patrols. The 1996 boundary expansion areas have recently been surveyed, fenced, and posted.

At least 23 species of nonnative plants have dispersed into the monument. Invasive nonnative species directly compete with native plants, and can significantly alter natural plant communities and wildlife habitats. Nonnative species may rapidly colonize areas where the ground surface is heavily disturbed by equipment or constant foot traffic. Within the monument, populations of cheatgrass (*Bromus tectorum*), mullein (*Verbascum thapsus*), filaree (*Erodium cicutarium*), horehound (*Marrubium vulgare*), and dalmatian toadflax (*Linaria dalmatica*) have infested disturbed areas along road and trail corridors, developed areas, or areas of heavy visitation. Although these species are commonly observed, the monument currently lacks sufficient staff or funding to actively monitor or attempt to control them.

Success in controlling invasive plants would be predicated upon early detection of infestations before they grow out of control, or upon the availability of ecologically sound and affordable technology. The best measures to control these species are proactive planning of access routes and ground-disturbing activities to minimize the potential for establishment and spread.

U.S. Forest Service management of the Walnut Canyon watershed has the greatest potential to affect natural systems and processes within the monument. The NPS addresses interagency concerns through monitoring ecosystem conditions and participating in the U.S. Forest Service planning process. Improved coordination with the U.S. Forest Service could mitigate certain adjacent land use impacts upon natural resources within the monument, including site-specific actions such as road closures, fence realignments, and joint fire management near the current monument boundary.

The city of Flagstaff has annexed all lands adjacent to the north and west boundary of the monument. Flagstaff is rapidly growing, and residential development is also occurring on private lands to the northeast of the monument near the communities of Cosnino and Winona. Natural systems and processes within the monument are currently buffered from development impacts by Coconino National Forest and Arizona State lands. However, if the status of these lands change, development could greatly increase recreational intensity and illegal activity impacts within the Walnut Canyon watershed, further fragment wildlife habitat, and hinder the NPS from using fire to maintain natural vegetation communities.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

This section complements the preceding section on natural systems and processes, and is intended to specifically address the management of Federally protected species and other special status species known to occur or which potentially within Walnut Canyon National Monument. These species are listed under the Endangered Species Act. Other species are identified as “sensitive species” or “species of concern” by local, regional federal, state, and tribal agencies, or were identified during the public and agency scoping process for the general management plan.

Region

The diversity of landscapes and habitats in the region naturally provides for impressive species diversity. Habitats range from alpine tundra on the San Francisco Peaks to Mojave Desert shrub vegetation at the bottom of the Grand Canyon. Old-growth coniferous forests and other vegetation communities in the region, combined with physiographic features such as canyons and mountains, provide habitat for a number of threatened, endangered, and sensitive species. Within Coconino County, Arizona, there are 5 plant, 9 animal (including fish), and 1 invertebrate species that are formally listed as threatened or endangered. There are another 54 plant, 51 animal (including fish), and 5 invertebrate species that may be exceedingly rare and are being monitored by the U.S. Fish and Wildlife Service, Arizona Game and Fish Dept., U.S. Forest Service, and Navajo Natural Heritage Program (Arizona Game and Fish Department 2001).

Among all biological groups, fish are the most threatened. In addition to the fishes, a disproportionate number of rare and threatened plant, animal, and invertebrate species also require perennial streams,

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wetlands, or riparian habitats. This reflects the widespread alteration of the entire region's freshwater ecosystems.

Of the region's rare plant species, several are endemic to the Mogollon Highlands and San Francisco Mountains, including the San Francisco Peaks groundsel (*Senecio franciscianus*), listed as threatened, and Bebb's willow (*Salix bebbiana*). The Sunset Crater penstemon (*Penstemon clutei*) and cinder lady's tresses (*Phacelia welshii*) are endemic to the volcanic cinder deposits surrounding the San Francisco Volcanic Field. Riparian areas also harbor numerous plant species of concern, such as Navajo sedge (*Carex specuicola*), Alkali grass (*Puccinella parishii*), which occurs at lower elevations in wetter sites north of the Little Colorado River, and alcove bog orchid (*Platanthera zothecina*). A number of species, such as the Flagstaff pennyroyal (*Hedeoma diffusum*), inhabit ponderosa forest, and may depend on fire to maintain an open forest canopy so that sunlight penetrates to the ground. Many species within the cactus family occupy very specific habitats and are sensitive to disturbance, including livestock grazing. Because of their popularity with horticulturists, all native cactus species within Arizona are protected under state law.

The Mexican spotted owl (*Strix occidentalis* spp. *lucida*), listed as threatened under the Endangered Species Act, is found within Northern Arizona, primarily in closed-canopy, mixed-conifer stands on steep mountain slopes. Within the southern Colorado Plateau region, spotted owls also live in canyon habitats. The U.S. Fish and Wildlife Service recently designated critical habitat for the species. The Southwestern willow flycatcher, an endangered bird species, depends upon very specific riparian habitat conditions along perennial streams within the region. Relatively breeding and summer populations of bald eagles

(*Haliaeetus leucocephalus*) occur in the region. Breeding pairs occur near the Verde River and large lakes. A sizeable population of overwintering bald eagles also occur over a large area of ponderosa pine forest in northern Arizona. Although recently removed from the endangered species list, the peregrine falcon (*Falco peregrinus anatum*) inhabits cliff massifs in the region. Even though peregrine populations have recovered and it is no longer considered threatened, population levels continue to be monitored. Other regional raptor species of concern include the northern goshawk (*Accipiter gentilis*), burrowing owl (*Athene canucularia* ssp. *Hypugaea*), and ferruginous hawk (*Buteo regalis*).

Wildlife managers and the general public are concerned about the golden eagle (*Aquila chrysaetos*) because of its low population density, ecological importance as a predator and indicator of environmental quality, public concern for its welfare, and traditional importance to American Indians. As with other wide-ranging raptor species, golden eagles have declined as a result of habitat loss, historic predator control programs, and power line electrocution. Eagles are legally protected from being killed or taken under the Eagle Protection Act. The U.S. Fish and Wildlife Service administers this Act, and annually issues permits to American Indian tribes to take specified numbers of golden eagles and feathers for ceremonial use. Golden Eagles are solitary animals, and little is known about their distribution, number, and status within the Colorado Plateau Region. Although the U.S. Fish and Wildlife Service recently proposed a study to assess the status of the species throughout the western United States, currently there is currently no means of ensuring the regional population remains stable.

Bat species are considered to have specialized habitat requirements and sensitivity to environmental impacts.

Twelve species are currently identified as species of concern.

Although not formally listed or considered a species of concern, pronghorn antelope (*Antilocapra americana*) are the focus of considerable wildlife management effort because they are attractive, large herbivores and an important game species, and the public is concerned about their continued survival. Wildlife managers are concerned about the decline in the pronghorn population in northern Arizona over the past few decades (Bright and Van Riper III 2000). The species was historically overhunted and nearly extirpated in the Southwestern United States. The continuing decline is primarily attributed to habitat fragmentation caused by conventional range fences, which antelope do not jump over and therefore must find weak sections of fence to cross under. Pronghorn herds are effectively confined and prevented from moving to water and forage during drought years or to lower elevations during severe winters. Other causes of decline include road mortality and continuing loss of open grassland habitat.

Park

Walnut Canyon provides habitat for a few threatened and several sensitive species. The Arizona Heritage Data Management System (Arizona Game and Fish Department 2001) was consulted via the Internet to generate a list of threatened and endangered species, and other "species of concern" for Coconino County, Arizona. Plant species on the list were compared with the flora summary checklist recently compiled by the NPS (2001). In addition, a survey for special status plants at the Flagstaff Area National Monuments, including Walnut Canyon, was recently completed by Huisinga and others (2000).

Currently, no federally listed threatened or endangered plant species are known to

occur in Walnut Canyon National Monument.

One plant species, *Rumex orthonuerus*, currently listed as threatened, occurs in wetland meadows in the Mogollon Highlands southeast of the Coconino Plateau. The species could potentially occur at wetter sites along the Walnut Canyon floor. However, it has not been discovered during numerous botanical inventories of the monument, and likely does not occur because of the relative scarcity of deep soil terraces adjacent to perennial waters.

Although not formally protected under the Endangered Species Act, two plant species of concern occur within the monument- *Aquilegia desertorum* and *Erigeron saxatalis*. Several populations of *Aquilegia desertorum* are documented within the monument. The species inhabits shaded sites in rocky limestone terrain. Several populations of *Erigeron saxatalis* are documented within in the monument along the canyon bottom.

Another three plant species of concern have not been documented but could potentially occur within the monument- *Cimicifuga arizonica*, *Clematis hirutissima* var. *arizonica*, and *Hedeoma diffusum*. *Cimicifuga arizonica* occurs within the Mogollon Highlands region in deep, narrow canyon habitats on moist, loamy soil and beneath heavily shaded riparian and coniferous forest canopy cover. This species has not been discovered during several field surveys and probably does not occur within the monument because of the relative scarcity of deep soil terraces adjacent to perennial waters. *Clematis hirutissima* var. *arizonica* occurs in the Walnut Canyon watershed upstream from the monument. The subspecies grows in groves under shaded forest and woodland vegetation, on gentle slopes with well- developed, limestone- derived soils. This subspecies has yet to be discovered during botanical

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surveys of the monument, but likely occurs because of the presence of good habitat. *Hedeoma diffusum* grows along limestone bluffs in Walnut Canyon, and has been documented near the monument boundary on the Coconino National Forest. This species has yet to be discovered during botanical surveys of the monument, but likely occurs because of the presence of good habitat.

The Mexican spotted owl, listed as threatened under the Endangered Species Act, is known to live and nest within Walnut Canyon. Mexican spotted owl breeding activity has been monitored at various times between 1989 and 1998. The U.S. Fish and Wildlife Service recently designated the entire monument as critical habitat for the species. The NPS is cooperating with the U.S. Fish and Wildlife Service and U.S. Forest Service to implement the management actions identified in the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995). Specific actions include monitoring nesting activity and breeding success, protecting critical habitat from wildfire, and managing forest vegetation to conserve specific microhabitat attributes.

Bald eagles, listed as threatened under the Endangered Species Act, routinely spend the winter in the Mogollon Highlands area. Although bald eagles are not known to regularly use winter roost sites within the monument, individual birds are occasionally observed perching in dead tree snags and feeding on elk carrion within the monument. The nearest active bald eagle nesting areas are along the Verde River and large lakes on the Coconino National Forest south of the monument. There are a number of regularly used winter roosting sites on surrounding forested lands.

The peregrine falcon (*Falco peregrinus* ssp. *anatum*) occurs within Walnut Canyon. Peregrines breed on steep cliff faces within

the monument. One of the aeries lies within the backcountry closure area. The other is within the 1996 western boundary expansion area, and is located on a cliff that has been subject to recreational climbing activity in the past. No NPS management activities, including visitor activities, are currently occurring or proposed on or above known peregrine aerie cliffs.

The northern goshawk (*Accipiter gentilis*) also inhabits the monument area. Northern goshawks are relatively solitary raptors that prefer forest interior habitats. Two nest sites have been documented within the monument in the backcountry closure area.

The mountain lion (*Felis concolor*) is also a year round resident of Walnut Canyon. This species remains a concern for the public and resource management agencies because it is a large predator with an important ecological role, and with the potential to attack humans on public lands within and around the monument. Mountain lions have expansive home ranges that transcend the monument boundary. The NPS currently has very little information on the distribution and abundance of mountain lions within the Walnut Canyon area, but suspects the canyon provides good den sites. As Flagstaff continues to grow, residential development is anticipated to encroach upon the western monument boundary. Along with this growth, recreational activity is expected to increase in proximity to the boundary, along with the potential for human- mountain lion interactions. NPS resource management policy directs the agency to sustain the ecological role of natural predators while minimizing threats to public safety.

Bat species are considered to have specialized habitat requirements and sensitivity to environmental impacts. Twelve species are currently monitored within Coconino County as species of concern. Old trees, large dead snags, and the

fractured limestone faces of Walnut Canyon provide ample bat habitat, and Townsend's big-eared bat and other sensitive species potentially occur within the monument. The NPS has little information on the bat fauna, but recently began efforts to inventory this faunal group.

LONG-TERM INTEGRITY OF WETLANDS, FLOODPLAINS, AND RIPARIAN RESOURCES

This section complements the preceding section on natural systems and processes, and is intended to specifically address compliance with regulations and executive orders mandating wetlands conservation and floodplain planning requirements. In addition, most floodplains and wetlands in the Southwestern United States harbor unique riparian habitats and rare species. During the public and agency scoping process, pertinent issues include potential impacts to the narrow riparian corridor along the Walnut Canyon floor and isolated perennial seeps and springs found primarily within the tributary side canyons. Scoping issues also included the development of facilities and accommodation of visitor activities in potential flashflood areas. The primary concern expressed about wetlands, floodplains, and riparian habitat was ensuring that the unique riparian resources are conserved within Walnut Canyon.

Region

The southern Colorado Plateau receives a limited amount of precipitation, and surface waters are scarce. Although they represent a low percentage of the total land area within the region surrounding Walnut Canyon National Monument, streams, wetlands, and riparian areas harbor a high percentage of the region's overall biological diversity and are precious resources. Among all biological groups within the region, the fishes have the greatest number of species

that are formally protected under the Endangered Species Act (Arizona Game and Fish Department 2001). Numerous protected and sensitive plants, animals, and invertebrates are restricted to perennial streams, wetlands, or riparian habitats, reflecting widespread alteration and threats to most of the region's freshwater ecosystems.

The region typically experiences a period of drought from early spring through summer, a strong thunderstorm "monsoon" from late summer through early autumn, and unpredictable precipitation during the winter. Precipitation amounts strongly correlate with elevation. Most of the regional watershed drains northeastward from the San Francisco Mountains and surrounding Coconino Plateau into the Little Colorado River. The Little Colorado River headwaters reach 200 miles southeast into New Mexico. The river flows into the Colorado River at Marble Canyon and then through the Grand Canyon. A smaller area of the regional watershed drains south of the Mogollon Rim highlands into the Verde River basin.

All perennial streams and ephemeral tributary washes are heavily impacted by human uses, primarily livestock grazing, but also by damming, diversion, and groundwater withdrawals for public water supply, hydropower generation, limited agriculture and industry, and public recreation. Narrow galleries of cottonwood, willow, and sycamore trees once dominated most stream banks, but are now almost entirely replaced by thickets of nonnative tamarisk and desert scrub. Available riparian habitat and natural stream and spring waters for wildlife have also diminished during the last century, especially for birds.

Reliable springs and seeps are rare throughout the region and even scarcer in the northern half. Although springs support

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small riparian areas, these are usually rich in plant species and provide important surface water for wildlife such as elk, deer, and antelope. Springs are fed either from shallow, perched aquifers or from the large, regional Coconino Aquifer (Bills et al. 2000). Winter precipitation seems to play an important role in recharging these aquifers. Most springwater within the Inner Basin of the San Francisco Mountains is completely used as part of the public water supply for Flagstaff. Many reliable springs that are near areas with good rangeland have been fully contained and diverted for livestock use and are no longer available to wildlife. Some, such as Oak Creek, are now popular public recreation attractions.

Some of the impacts of diminished natural water sources for wildlife have been mitigated by the development of livestock tanks. Passive precipitation catchment systems, or "guzzlers" have also recently become popular for supporting game species populations, ranching, and recreational activities. However, these are not naturally distributed across the landscape, and have likely changed species population numbers, seasonal ranges, vegetation browse levels, and species interaction patterns, including natural predator-prey relationships.

Considerable vegetation change has occurred within the regional watershed during the last century, which is likely having a measurable influence on groundwater recharge rates. Fire suppression at higher elevations is leading to overcrowded forest stands. At mid-elevation, fire suppression and livestock grazing are believed to contribute to woodland encroachment into existing grasslands. Livestock grazing at lower elevations has favored the expansion of desert scrub into former arid grasslands. Increased forest and woodland tree numbers are intercepting groundwater in the root zone before it can infiltrate and

recharge aquifers. Increasing aridity and loss of herbaceous cover at lower elevations promotes rapid precipitation runoff, increases surface temperatures and evaporation rates, and decreases soil infiltration rates.

The combined extreme nature of summer thunderstorms, rapid spring snowmelt during some years, reduced herbaceous cover, and thin hydrophobic soils over much of the region make flash flooding a common safety threat. Many of the major washes and Little Colorado River flood quite frequently following these events. Storm runoff patterns have also been influenced by the construction of numerous stock tank impoundments in support of ranching operations.

Other regional surface water sources include windmills and powered pump wells. Because reliable groundwater is typically limited to the Coconino Aquifer at depths of 800 to 1,500 feet or more, the use of water wells is fairly cost prohibitive.

Park

Wetland, floodplain, and riparian resources within Walnut Canyon National Monument are restricted to the narrow canyon bottom and a number of perennial seeps found in the tributary canyons on the south side of the monument. The floor of Walnut Canyon within the monument harbors approximately 80 acres of well-developed riparian vegetation, which is locally dominated by stands of Arizona walnut and cottonwood trees. Box elder, New Mexico locust, Arizona wild rose, and red osier dogwood are also common. The riparian plant community is very rich in shrub, wildflower, vine, and a few obligate wetland species. In the narrow reaches of the drainage, water catchment basins are scoured into Coconino Sandstone bedrock. These are filled seasonally by local snowmelt and rainfall and provide important water sources for wildlife. In

addition, numerous localized seeps have been recorded in the fractures and bedding planes of the steep canyon walls. Prominent seeps are also found in the tributary canyons on the south side of the monument. These provide localized microhabitats for a number of plants not found elsewhere within the monument. Wetlands that meet U.S. Fish and Wildlife Service jurisdictional criteria under Section 404 of the Clean Water Act are likely restricted to the narrow canyon drainage and perennial seeps.

The Walnut Canyon watershed drains an area of approximately 170 square miles. The headwaters of Walnut Creek are found in the Mormon Mountain- Mormon Lake area more than 20 miles south of the monument. Prior to 1900, the creek is believed to have ephemerally flowed through the bottom of Walnut Canyon on a biannual cycle. Reliable flows typically occurred early each year during the period of spring snowmelt, and less predictable flows likely occurred later each year during in the summer and fall thunderstorm season. The natural hydrology within the Walnut Canyon drainage was severely altered when the city of Flagstaff began impounding Walnut Creek for use as its public water supply. Around 1900, the first dam was built upstream of the monument to create Lower Lake Mary. The dam significantly disrupted seasonal water flow through the canyon. A second dam was built in 1941 to create Upper Lake Mary, at which time Walnut Creek ceased flowing. Since 1941, the canyon has flooded only a few times during extremely wet seasons that completely filled both lakes. Flows of lesser magnitude occur about once a decade from smaller tributary watersheds below the lakes.

The impoundment and diversion of Walnut Creek for the last 60 years has greatly impacted the wetland, floodplain, and riparian resources within the monument. The processes of stream channel scouring, sediment transport, terrace formation, and

local spring and seep recharge have been altered in ways that may never be fully understood. Riparian vegetation is also changing in the absence of seasonal flows. Historic photographs from the 1940s show an open, well- defined stream channel along the canyon bottom. Today, the channel is obscured by dense vegetation. Deciduous tree species, including the Arizona walnut for which the canyon is named, are believed to be decreasing in number, and New Mexico locust now dominates the former open drainage channel. Most of the riparian species that have persisted for the last four decades are expected to survive, albeit in different proportions than prior to the construction of the dams. Local wildlife populations have probably already adapted to less- reliable surface water. Aquatic invertebrates and amphibians were likely impacted the most. The NPS believes that the riparian system is still changing in response to dewatering of the drainage, and long- term trends have yet to be assessed. The restoration of wetland, floodplain, and riparian resources is predicated upon cooperation by the city of Flagstaff to provide seasonal water releases from Upper and Lower Lake Mary.

Another relatively small impoundment exists near the downstream end of the canyon, on the private inholding within the monument. The Santa Fe Dam was built around 1885 to supply water to the Santa Fe Railway, and has locally impacted riparian resources. The former reservoir area is now almost entirely filled with sediment, and most local storm flows pass through the dam's spillway. The Walnut Creek stream channel and sediment plain behind the dam are dominated by both native and nonnative weedy annual species, such as Russian thistle (*Salsola iberica*), cheatgrass (*Bromus tectorum*), horehound (*Marrubium vulgare*), sweet clover (*Melilotus albus*), and field bindweed (*Convolvulus arvensis*). The reservoir area appears to have been silted in

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for several decades. With the diminished water storage capacity, storm flows readily pass over the spillway and into the lower drainage channel much as they would have before the dam was built. The canyon bottom vegetation and drainage channel downstream from the reservoir appear to be in stable condition in equilibrium with the current flow regime. The canyon floor area around the reservoir is seasonally used by wildlife for both browse and water. If the NPS eventually acquires the private parcel of land on which the dam and reservoir lie, the agency would likely conduct resource assessments and explore ways to mitigate the effects of the impoundment on the canyon riparian corridor.

Currently, there are no NPS visitor facilities within the Walnut Canyon bottom or near the perennial seeps. Riparian resources are buffered from water quality degradation by surrounding undeveloped Coconino National Forest and Arizona State trust lands. However, the city of Flagstaff has annexed all lands to the north and west boundary of Walnut Canyon National Monument, including a relatively large area contiguous to the canyon rim and tributary canyons upstream of the monument. Development of these lands within the relatively pristine canyon watershed could significantly increase non-point source pollution, such as motor and exhaust residue from streets, and fertilizers, herbicides, and pet waste from lawns.

The occurrence of shallow groundwater is expressed only via the aforementioned seeps within sedimentary rock fractures and bedding planes. It is believed that the seeps are recharged via local fractures and limestone "karst" erosion features in the watershed, and there is little threat of contamination or aquifer depletion under current land uses within the watershed. The only reliable groundwater beneath the monument is found at a depth greater than 1,500 feet within the regional Coconino

Aquifer. The NPS maintains a well into the aquifer to supply operations at the monument, and the water table has declined about 10 feet over the last 30 years.

ABILITY TO EXPERIENCE PARK RESOURCES

The scoping process identified the visitors' ability to experience park resources related to park significance as an issue. Concerns include access to park resources by the general public, access to information provided by museum collections and ability to see the "real thing" (actual artifacts, dwellings, etc., as opposed to replicas or simulations); minimally altered environment; access to a full spectrum of park resources for visitors with disabilities; ability of the public to understand park resources; ability to experience scenic, recreational, and educational pursuits; visitor understanding of regional context; uncrowded visitor experiences; visibility of night skies and natural soundscapes; and ability to hear natural sounds. Concerns also include personal freedom (inside and outside park boundaries); traditional employee/visitor experiences (interpretation through personal services, access to favorite sites); and traditional recreational activities (biking, climbing, etc.).

Region

The Flagstaff Area monuments are relatively small enclaves of National Park Service management located within a geographic area dominated by the much larger Coconino National Forest. Although natural and cultural resources within the monuments are recognized and protected for their special significance, they cannot be separated from their regional context. The geologic, natural, historic, and prehistoric stories of these places continue across monument and forest boundaries and

throughout much of northern Arizona; they can be fully appreciated and understood only as part of this larger picture.

Similarly, outdoor recreational opportunities abound in northern Arizona, on lands managed by a variety of agencies. The Flagstaff Area monuments are managed in accordance with the NPS mandate "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Concerns about traditional and proposed visitor experiences and recreational activities in the parks are evaluated in this context; it is recognized that certain activities, while inappropriate on NPS lands, are both appropriate and encouraged elsewhere. As population and development increase both locally and regionally, demand for recreational opportunities on public lands will increase accordingly. NPS information/education efforts are designed as part of a cooperative interagency effort to direct visitors to the best locations for their desired activities, whether on NPS, USFS, or other lands.

The public's ability to experience park resources is thus closely related to availability of resources on nearby non-NPS lands. Interpretation of park resources as part of a regional system is crucial, but not currently being accomplished. In all three Flagstaff Area monuments, wayside and museum exhibits are outdated and inaccurate and fail to emphasize the desired big picture. A major interpretive planning effort- to replace wayside interpretive signs along trails and roadsides and to redo museum exhibits in the visitor centers- is under way, concurrent with this GMP. The new exhibits will present a cohesive story, linking the natural and cultural resources of these three monuments with NPS, USFS, and other sites throughout the region. They will be designed for full accessibility, to

serve visitors with disabilities and/or different learning styles, and they will enhance visitors' ability to see the "real thing," using the actual structure, feature, or artifact whenever possible, or models, electronic images, virtual tours, or other means when necessary. Programmatic accessibility for visitors with a variety of impairments is being addressed in the Comprehensive Interpretive Plan.

The opportunity to present this type of interpretive message in a comprehensive manner is great, because travel patterns of visitors to the Flagstaff Area monuments are fairly well defined. Visitor surveys (Lee and Treadwell 1999) indicate that the majority of Sunset Crater Volcano/Wupatki visitors travel from south to north along FR545, the 36- mile scenic road connecting the two parks. Most (68- 70%) are engaged in a longer trip and are en route to Grand Canyon National Park and/or points north. Of Walnut Canyon visitors, 49% also go to Sunset Crater Volcano and 38% to Wupatki; for 61% this is part of a longer trip.

Park

As described in the Purpose and Need section, Walnut Canyon's purpose is "to protect ancient cliff dwellings and associated resources that are of great ethnographic, scientific, and educational interest, and to properly care for and manage the cultural and natural resources of historic, social, and scientific interest..."

Because of the physical layout of the park, visitors have the opportunity to experience the variety of park resources, but within a limited portion of the entire canyon. Walnut Canyon as a meandering geological feature is approximately 14 miles long. Ten miles lie within park boundaries, but only short segments and occasional side canyons are visible from most vantage points. This presents a confusing picture to visitors trying to understand the extent of prehistoric settlement and the direction of

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water flow through the canyon. An interpretive goal both in the visitor center and at overlooks is to make the canyon- the primary resource- understandable.

Unlike the other two Flagstaff Area monuments, Walnut Canyon is not a drive-through experience. The three- mile entrance road ends at the visitor center parking lot, which also serves the primary picnic area and two self- guided trails. Visitation to the canyon is therefore concentrated in this small area, occupying about 1/2 square mile, and is pedestrian in nature.

The visitor center affords excellent views into the canyon and contains a small museum in which exhibits convey basic concepts about the people who built the cliff dwellings. The building is constructed on several levels connected by stairs; the resulting accessibility issues have been temporarily remedied through the installation of wheelchair lifts, but long-term architectural solutions are needed.

Visitors can walk two interpretive trails. The half- mile Rim Trail follows the edge of Walnut Canyon to two overlooks, then winds through pinyon- juniper forest to a small pueblo and pithouse, returning finally to the picnic area and visitor center parking lot. This trail is relatively level and paved. The first 100 yards (to the first overlook) currently meet accessibility standards, and additional improvements are planned to provide access to the pithouse area. The Island Trail descends 185 feet (about halfway) into the canyon, passing 25 cliff dwelling rooms that encircle the base of Third Fort (structural remains perched on the highest point of the "island" landform within the canyon). The "fort" itself is off-trail and not open to visitation. The trail is paved and includes 240 concrete steps, making this experience a physical impossibility for many visitors. Ranger- led

hikes are offered seasonally to the historic ranger cabin, which predates NPS management of the monument, and to other archeological sites in the canyon. Hiking is not permitted in the canyon bottom.

Motorized sightseeing is limited to views of the forest along the entrance road; the canyon, and cliff dwellings, and rim side dwellings are not visible from the road. Occasional visitation occurs to the south side of the canyon via unpaved USFS roads, but there is no NPS presence and no on- site interpretation of the resources.

We can only imagine the actual appearance of the canyon walls, cultivated croplands, vegetative cover, and other elements as they were during the occupation of the cliff dwellings. To today's visitors, the forested Walnut Canyon environment appears natural and little altered by modern activities. However, water flows in the canyon have been greatly altered by upstream dam construction during the last century, and wildlife and vegetation within the canyon have changed accordingly. Additional alteration to the natural scene is probable as Flagstaff residential development extends closer to the park boundary.

According to recent visitor surveys (Lee and Treadwell 1999), visitors are generally satisfied with their experience at Walnut Canyon. Most visitors incorporate their trip as part of a larger travel plan, and many are on their way to or from Grand Canyon National Park. Many visitors want to see Walnut Canyon and its archeological ruins. Many also expressed the desire to look at scenery, enjoy the sights and sounds of nature, and share the park with others (many are locals who are giving a tour to family and/or friends).

PARK NEIGHBORS; LOCAL, STATE, AND TRIBAL LAND MANAGEMENT PLANS; AND LAND/RESOURCE MANAGING AGENCIES

Impact topics were identified through the scoping process, and concerns covered by this section include effects on neighbors' access and emergency response, economic contribution of the park to local economies, access to culturally sensitive areas by traditional users, traditional land uses external to park boundaries, and possible conflicts between the proposed action and local, state, or Indian tribal land use plans, policies, or controls.

Region

Walnut Canyon National Monument is east of the city of Flagstaff, Arizona. Phoenix, a rapidly growing metropolitan complex of more than two million people, is 150 miles south of Flagstaff. Flagstaff, a major community of northern Arizona, has a population of approximately 55,000. Flagstaff offers numerous services for the extensive ranching, lumber, and tourist activities of northern Arizona. The area between Flagstaff and Sunset Crater Volcano and Walnut Canyon is being subjected to increasing residential and business development. The remainder of the region surrounding the monuments is sparsely populated, although a private development (called "Alpine Ranchos") is increasing in population northeast of Sunset Crater Volcano, leading to substantial increases in nonpark travel on park roads.

Land use in the region varies from the expanding urban influences of Flagstaff near Sunset Crater Volcano and Walnut Canyon to low-intensity grazing at Wupatki. The Coconino National Forest, surrounding Sunset and Walnut and bordering Wupatki on the south and west, is

under multiple-use management. The primary uses near the monuments are recreation and grazing.

Information from the U.S. Geological Survey indicates that some lands in the area of the monuments are prospectively valuable for oil and gas, geothermal steam, and associated geothermal resources. Because of the lack of surface indications and drilling data, the potential for geothermal energy development and for discovery of oil and gas in the area is unknown at the present time. The Coconino National Forest and adjacent region are currently being studied by the U.S. Geological Survey and private corporations for potential geothermal development. Permits have been granted by the U.S. Forest Service to energy-related firms for research on Forest Service lands adjacent to the Wupatki boundary. Based on present information, there are no additional valuable leasable minerals. Minerals, including cinder, pumice, gypsum, miscellaneous clays, sulfur, and uranium, are reported in the area surrounding the park, and the finding of meteorites and meteorite diamonds has been reported in the vicinity. It is unknown to what extent, if any, these minerals exist at commercially valuable levels in the monument. A cinder quarry operation is located outside Sunset Crater Volcano, northwest of the visitor center.

Woodcutting, shooting/hunting, and off-road vehicle activities are evident throughout Forest Service areas adjacent to the monument. Occasionally, these incompatible activities spill over onto monument property because boundaries have not yet been completely fenced.

The location of the monument within this regional complex of public lands is one of the most important aspects determining its visitation pattern, as well as its resource management problems and programs.

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There is no public transportation to any of the three Flagstaff Area monuments. Sightseeing bus tours are operated by Nava-Hopi Tours, Grayline Tours, and smaller commercial companies throughout the year.

US89, a major north-south route through Arizona and Utah, and I-40 provide access to the parks from Flagstaff, which is served by Amtrak rail service, bus service, commercial airlines, and private vehicles via I-40 and I-17.

Park

In addition to Federal regulations and USFS management policies, the primary management guidance for lands surrounding the monument is given in the Coconino National Forest Land and Resource Management Plan. Under the umbrella of the forest plan, the USFS plans and implements a wide variety of site-specific activities and projects, such as fire hazard reduction, forest health, grazing allotments, firewood cutting, trail and recreational facility development, materials quarries, wildlife habitat management, riparian restoration, invasive weed management, and off-road recreation management. As Federal agencies, the USFS and NPS routinely communicate and participate in planning for activities which mutually affect resources and agency missions across the monument boundary.

Forest resources include ponderosa pine, pinyon pine, and juniper, which attract woodcutters seeking personal firewood. There are antelope, elk, and deer that attract hunters and wildlife viewers. The Coconino National Forest administers several permits for grazing by local ranchers in the lands adjacent to the monument. Traditional and current forest uses by citizens of Flagstaff include horseback riding, recreational vehicle uses, hiking, camping, hunting, birding, woodcutting, shooting, and mountain biking. A section of the Arizona Trail passes the northwest corner of the

monument and is used by local and regional visitors for recreational purposes. Because of this proximity, occasional inappropriate uses occur on monument property, including trespass, shooting, hunting, woodcutting, and vehicle travel.

The northwestern boundary of the monument coincides with the incorporated boundary of the City of Flagstaff, and is currently within two miles of the actual limit of residential development on the edge of town. In addition, unincorporated neighborhoods are rapidly growing outside the city limits north and northwest of the monument. Park Service staff are involved in the long-range planning efforts of the city and county. User and resource protection activities occasionally involve Forest Service, Arizona Game and Fish, City of Flagstaff, Coconino County, and other units of the National Park System. Relationships with these other agencies are strong and cooperation is excellent.

Emergency responses in the Walnut Canyon area come from the various land management agencies and public safety organizations. The National Park Service provides assistance with law enforcement, search and rescue, emergency medical assistance, and wild fire management in the immediate area. The county deputizes NPS rangers, and members of the NPS staff serve as crew on national forest fire fighting teams. Coconino County provides law enforcement and search and rescue. The Forest Service provides law enforcement relative to recreation, consumptive uses, grazing, and wild fire suppression. Arizona Game and Fish provides law enforcement relative to hunting activities. The Arizona Department of Public Safety provides law enforcement (traffic) on primary roads and air support in search and rescue operations. The city of Flagstaff (Guardian Ambulance) provides medical emergency responses (ground and air).

Three state trust sections of land adjacent to, or within two miles of, the monument could be offered for sale and development. Development could pose external threats in the form of increased unauthorized uses, trespass by animals, pollution, noise, and degradation of the viewshed.

Approximately 291 acres of private land exist inside the eastern area of the monument, and there is potential for development by the owner. The owner is supportive of NPS programs and is very cooperative; however, development of this private property could result in water impoundment behind a historic dam to create a lake that could possibly back up onto monument land. There is the potential for residential development and increased exposure of cultural resources to trespass and inappropriate uses resulting from residential development and the attraction of a lake. The land protection plan (NPS 1990) recommends acquisition of this inholding, and the owner has expressed willingness to consider NPS acquisition.

The NPS money generation model is a formula used to estimate the benefits attributed to the local economy resulting from the number of visitors to National Park System areas. The estimates of those contributions to the greater Flagstaff economy from Walnut Canyon National Monument include tax revenue of \$106,119 and a total spending revenue of \$2,122,377 (based on the latest calculations from 1996).

There are several cooperative agreements with other agencies: a multiagency agreement for wild fire management, an agreement with the Coconino National Forest and Coconino County Sheriff's Office for joint law enforcement activity, a cooperative program with Coconino National Forest for educational activities on both forest and park lands, and an annual contract with the city of Flagstaff for structural fire suppression.

The canyon has significant biological diversity and concentrations of threatened and endangered species. Additionally, mountain lion, bear, antelope, deer, and elk move through the monument, exemplifying the diverse habitat located so close to city development. Visitation to the canyon itself is not encouraged, and local uses are minimum and seasonal. The monument staff works in cooperation with other land and resource management agencies in inventory and monitoring activities.

Ten affiliated tribes have identified traditional relationships and/or cultural properties within park boundaries and have concerns about public access to sites; some groups need access to restricted use areas for plant gathering and traditional activities. Consultation with these tribes is routine and ongoing.

OPERATIONAL EFFICIENCY

Roadways and Access

Access to Walnut Canyon National Monument is gained primarily via I- 40, approximately 5 miles south of the city of Flagstaff, and a paved 3- mile entrance road. Visitors travel 2.1 miles before entering park boundaries. The entrance road was constructed in 1963 and was built specifically to provide access from I- 40 to the park. Construction of I- 40 was completed in the late 1950s and early 1960s and replaced the famed Route 66.

The entrance road provides the primary access to the north rim and to the park's residential area and maintenance complex. The road terminates at a loop parking lot immediate adjacent to the visitor center. Three small pullouts with picnic areas exist along the roadway; two are on the west side of the road, and one is on the east side. Employees and visitors traveling this road are at risk of hitting large game, primarily deer. Shoulders have steep drop- offs and

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are quite narrow. There is seldom room for a vehicle to safely pull to the side of the road.

The original entrance road, also known as the Old Walnut Canyon Road, or FR303, begins at the Flagstaff city limits and terminates at I-40 approximately two miles west of the Walnut Canyon exit. It intersects with the park entrance road approximately 1/2 mile north of the entrance station. This road is sometimes used as a commuter route by residents living near Cosnino on the north and south sides of I-40. Both the paved entrance road and FR303 are patrolled by NPS personnel. The Forest Service and Coconino County maintain FR303, and NPS maintains the entrance road. Use of the entrance road and FR303 is not regulated. Entrance to the park, however, is gated just beyond the entrance station, and locked at night.

There are a number of official and unofficial roads USFS roads to the west and northwest of the monument that provide access up to park boundaries. Most of these roads emanate off of FR303.

The south rim of the park is closed to all visitation. Myriad undeveloped roads provide access to the south boundary, including FR128 and FR128c. FR128 is accessed via I-40 at the Townsend/Winona exit, approximately six miles east of the Walnut Canyon exit. FR128 leads to Anderson Mesa and Marshall Lake and terminates at Lake Mary at the intersection of Forest Highway 3 (the Lake Mary Road). Only one road provides access into the park on the south rim: FR128c, a 3.4-mile spur road off FR128, was constructed by the Forest Service in the 1980s and leads to a small overlook that provides a view of the Walnut Canyon drainage system.

Public access via Forest Service roads on the south rim, and the lack of NPS presence make protection of park resources difficult. The extensive travel time (approximately 1

hour via FR128) to the south rim poses difficulties in responding to emergencies in a timely fashion. The inability to regulate the use of forest roads adjacent to park boundaries makes protection of resources difficult, and unauthorized access into the park occurs fairly frequently.

Facilities

Visitor use areas and facilities within the park include two self-guided trails, a visitor center, museum, and picnic areas. As noted previously, three small picnic areas are located along the entrance road.

Other facilities include four single-family residences, one mobile home, a maintenance shop complex, a historic log cabin (in need of extensive and comprehensive preservation treatment) and support infrastructure (utilities, secondary roads, fences, and other outbuildings), all dated and in need of substantial upgrade. Four permanent employees reside in park housing, and the mobile home is used for one or two seasonal employees. Two housing units are historic, built in 1939, and both need extensive upgrade. The mobile home needs to be removed and replaced with adequate seasonal quarters. Three employees are required occupants and provide minimum after-hours coverage for protection and maintenance emergencies.

Park facilities and infrastructure date from the late 1930s and early 1940s and from the 1960s (Mission 66). Maintenance activities focus primarily on custodial activities and routine required tasks. There is insufficient staff to function in a proactive manner in regard to preventive maintenance.

The visitor center is vintage Mission 66 construction and essentially serves as a substantial addition to the original visitor center. A large "loop" parking lot adjacent to the visitor center also serves the Island and Rim Trails. The visitor center also serves as offices for park interpretive and

law enforcement staff. It also contains space for curatorial collections and a small museum. This facility is considered inadequate and obsolete and in serious need of upgrading and remodeling. The lack of fire and climate control and the existence of outdated utilities and features has placed collections and exhibits at risk and has created an inhospitable work environment.

The parking lot is too small for buses and vehicles towing trailers and for the number of park visitors, resulting in overflow onto the entrance road, which creates an unsafe situation. In extreme situations, visitors are denied entry to the park.

The primary visitor attraction is the Island Trail, which begins and ends at the visitor center and requires visitors to descend (and ascend) 240 steps into the canyon. There are numerous steep exposures along the trail, and it is quite narrow and often overcrowded, forcing people to step off onto rough terrain to allow others to pass. The climb out of the canyon in conjunction with the elevation of 6,700 feet often taxes the capabilities of visitors. The trail is a little under a mile long, and it encircles the "Third Fort," allowing visitors access to 25 cliff dwellings rooms. Because of the steepness of the trail, it is not accessible to persons with disabilities.

A second trail, the Rim Trail, is a 0.7- mile loop trail that takes visitors along the north rim of the canyon and past two developed archeological sites. It is fairly flat and accessible to persons with mobility impairments for a portion of its length.

For resources protection and preservation purposes, the remaining portion of the park, including the south rim, are closed to visitor use.

There are no gas, food service, camping, or concession operations in the park. The visitor center contains a bookstore operated by the Southwest Parks and Monuments

Association. Fees are collected at the entrance station during peak visitor use periods (mid- May through September), and at all other times are collected at the visitor center.

Utilities

The Park Service owns and operates the water and wastewater (sewer) systems. Arizona Public Service provides electrical service. U.S. West and AT&T provide the telephone service, but the monument owns its own phone system. The city of Flagstaff provides trash (solid waste) pickup through contract.

The park's domestic water supply is provided by a 440- foot well and contained in an elevated 50,000- gallon storage tank.

A large surface lagoon located along the north central boundary of the park manages wastewater. The lagoon currently operates at maximum capacity and requires pumping on a regular basis.

Walnut Canyon is connected to the other two monuments and the headquarters office via radio. The repeater for the radio is located on O'Leary Peak adjacent to Sunset Crater Volcano and is subject to damage from lightning strikes.

Staffing

A central Headquarters, located in Flagstaff, provides administrative services for the three monuments and is the office location for the superintendent and division heads for administration, resource management, ranger activities and fee collection, maintenance, and the cooperating association (Southwest Parks and Monuments Association). The facility also serves as a visitor information center for the three Flagstaff Area monuments and for other parks and points of interest in northern Arizona.

Resource management activities are accomplished by headquarters- based staff.

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Both resource management staff and park law enforcement staff have implemented a resource monitoring and patrol program. Resources management staff conducts limited research; however, the majority of the research is conducted by various agencies and institutions and selected and qualified interested individuals.

Interpretation and law enforcement staffing is concentrated at the visitor center and visitor services are provided primarily from that location. Because of the need to run both an information desk and fee collection kiosk, it is often difficult to provide staff for patrols, interpretive programs, and interpretive presence at the park resources.

Ranger patrols are conducted within the monument, around its perimeter, and occasionally onto adjacent National Forest lands. During busy visitation periods, there are not enough permanent staff members to respond to the increased needs of visitor services, protection, and resource management. Most visitor contact functions and programs are accomplished through Student Conservation Association employees and Volunteers-in-Park.

Staffing levels in all aspects of park operations, that is, to provide the necessary protection and preservation of park resources, to address visitor use needs, and to perform the necessary maintenance to park facilities and infrastructure, are considered inadequate.

One maintenance employee is a required occupant at Walnut Canyon. Staff numbers are inadequate to provide the desired level of janitorial services, and many routine housekeeping and maintenance needs are deferred. Maintenance staff from Sunset Crater Volcano provide assistance on an as-needed basis.

The majority of collections for the Flagstaff Area National Monuments have been

relocated to the Wupatki curatorial storage room. Storage space, storage environment, and protection at Walnut Canyon and Sunset Crater Volcano for museum objects are limited and poor. Storage environment at Wupatki is also poor, although it does provide a more secure location for the bulk of the collection. Approximately 50,000 objects, including historic photograph files, archives, natural history specimens, and archeological, ethnographical, and historical items, are stored at Wupatki.

All unprocessed collections, the rare book collection, the research library, and computer support are housed at the headquarters office.

Approximately 500 objects, including natural history specimens, ground stone artifacts, and archival material, are stored in the Walnut Canyon visitor center lunchroom. Storage space is limited to two small closets and some office space. The storage environment and security of the collections at Walnut Canyon is extremely poor. Because of limited space and environmental and accountability concerns, the majority of the collection has been moved to the Wupatki curatorial storage room.

Employee health and safety issues include potential exposure to hantavirus and other diseases resulting from rodent infestations in government quarters and workspaces. Efforts to mitigate the presence of the rodents are ongoing, but mice and other rodents often get into buildings. During the winter months staff are exposed to potentially dangerous driving conditions if they are required to conduct business at the other Flagstaff Area parks or headquarters during inclement weather. Mountain lion and black bear are known to occasionally frequent the general area of the trail and visitor center, posing a potential risk to visitors and employees.

ENVIRONMENTAL CONSEQUENCES

METHODOLOGY

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

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

Direct: An effect that is caused by an action and occurs in the same time and place.

Indirect: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.

Short-term: An effect that within a short period of time (generally one or two years but no more than five years) would no longer be detectable as the resource is returned to its predisturbance condition or appearance, generally less than 5 years.

Long-term: A change in a resource or its condition that does not return to predisturbance condition or appearance and for all practical purposes is considered permanent.

All alternatives were also evaluated based on external factors that, together with the actions of each NPS alternative, could have

cumulative impacts. In order to determine cumulative impacts, a cumulative scenario was developed. That scenario included the following actions:

On Forest Service lands, there will be some reduction in roads. Monitoring of impacts will continue and existing activities will continue unless monitoring shows unacceptable levels of resource degradation.

Increased growth of Flagstaff could mean more visits/demand for use of parks. Flagstaff is marketing the parks as part of their plan to attract more visitors. There are also increased tribal requests for use of renewable/nonrenewable resources.

Upstream dams and impoundments (Upper and Lower Lake Mary) will continue to affect water flow and the riparian corridor within Walnut Canyon.

Changes at Grand Canyon National Park could have implications for all three parks. The transportation plan restricts visitor use at the east entrance (visitors are no longer allowed to stop, just drive through). This could mean that visitors arriving in Flagstaff after visiting Grand Canyon may have more time to spend at Walnut Canyon. However, there may be a decrease in the number of visitors, but more demand for things to do by those who do come.

Development of the private inholding within Walnut Canyon National Monument could impact natural and cultural resources, including the historic Santa Fe Dam, and could alter views from primary public use areas within the monument.

Our ability to manage wildlife may be influenced by Arizona Game and Fish Department objectives. There will be increased ecosystem research (long-term monitoring).

Past activities like grazing and pot hunting continue to have effects.

LONG-TERM INTEGRITY OF ARCHEOLOGICAL RESOURCES

Methodology

The National Historic Preservation Act requires agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places. The process begins with an identification and evaluation of cultural resources for National Register eligibility, followed by an assessment of effect on those eligible resources, and concluding after a consultation process. If an action (undertaking) could change in any way the characteristics that qualify the resource for inclusion on the National Register, it is considered to have an effect. No adverse effect means there could be an effect, but the effect would not be harmful to those characteristics that qualify the resource for inclusion on the National Register. Adverse effect means the effect could diminish the integrity of the characteristics that qualify the resource for the National Register.

In order to analyze the effects of the GMP alternatives on archeological resources, all available information on known archeological sites was compiled (Baldwin and Bremer 1986; NPS Flagstaff Area archives; MNA, USFS and NPS archeological site files). Map locations of archeological sites were compared with locations of proposed developments and proposed modifications to existing facilities. Predictions about short- and long- term site impacts from visitation were based on previous studies of visitor impacts to archeological sites (Cinnamon n.d.; Coder et al. 1995a, 1995b; Downum et al. 1996; Fawcett 1993; Gale 1985; Green and LaBlanc 1979; Lightfoot and Francis 1978; Moore

1994; Nickens 1991; Nielsen 1991; U.S. General Accounting Office 1987; Wildesen 1982; Wood and Johnson 1978) and other nonrenewable resources in nearby parks (Roggenbuck et al. 1997), as well as on recent monitoring data from the Flagstaff Area National Monuments (Fairley 1998; Johnson 1999; O'Hara and Johnson 1997). Sociological studies comparing the deterrent effects of signs vs. ranger presence on sites were also considered in this analysis (Clark 1976; Johnson and Vande Kamp 1996; Johnson et al. 1994; Vande Kamp et al. 1994; Swearingen and Johnson 1994).

Archeological sites are continually deteriorating, due primarily to the effects of weather and gravity. Left alone, sites will inevitably degrade over time. Impacts from human visitation and use contribute to the effects of natural agents of deterioration, and they can substantially increase the rate of site deterioration. In general, it is not possible to control the deterioration caused by natural elements. In contrast, it is possible to control the effects of human impacts through careful planning of activities and new developments, by educating visitors and park staff, and by limiting or directing locations of human activity in and around archeological sites.

If we exclude impacts caused by deliberate vandalism or artifact collection, most impacts resulting from visitor use are relatively minor when considered on an individual basis. However, for the purposes of this plan, it is necessary to consider the cumulative effects caused by hundreds or thousands of visitors at a given location over the life of this plan. Thus, for example, while a single guided hike to an archeological site may have a negligible effect on site integrity, the cumulative impact of hundreds of hikers over 10- 15 years at dozens of sites can be substantial. In the following section, impacts are analyzed for each alternative based on

the numbers of sites that would be affected in conjunction with the cumulative effects of various types of activities over the life of the plan.

As noted above, effects to archeological resources can be either beneficial or adverse, direct or indirect, or short- or long- term. For the purposes of this analysis, levels of impact to archeological resources were defined as follows:



Negligible: The impact on archeological sites is at the lowest levels of detection, barely perceptible and not measurable.

Minor: The impact on archeological sites is measurable or perceptible, but it is slight and localized within a relatively small area of a site or group of sites. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed archeological site and would not have a permanent effect on the integrity of any archeological sites.

Moderate: The impact is measurable and perceptible. The impact changes one or more character defining feature(s) of an archeological resource but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.

Major: The impact on archeological sites is substantial, noticeable, and permanent. The impact is severe or of exceptional benefit. For National Register eligible or listed archeological sites, the impact changes one or more character defining features(s) of an archeological resource, diminishing the integrity of the resource to the extent that it is no longer eligible for listing in the National Register.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Under the No- Action Alternative, as well as the other two WACA alternatives, the following actions would occur:

The National Park Service would continue to work with the City of Flagstaff, Coconino County, the State of Arizona, the U.S. Forest Service, and other agencies to develop mutually beneficial partnerships. Resources located on Forest Service land adjacent to the monument would be managed in accordance with decisions reached in the FLEA process. Continuing NPS involvement in interagency planning and regional planning efforts would benefit archeological resources by ensuring that regional land management decisions take into account effects on archeological resources both inside and outside of the monument boundaries.

New interpretive wayside and museum exhibits would be installed in accordance with the Flagstaff Areas Comprehensive Interpretive Plan. Potentially, an upgrading/updating of interpretive media could improve long- term integrity of archeological resources through improving education of visitors about the significance, importance, and fragility of resources and how visitors can reduce their impacts to archeological sites.

The park would remain committed to improving accessibility for visitors with disabilities, and modifications of trails and other facilities to ensure safety for all visitors would continue. Improved definition and continued maintenance of trails would benefit archeological resources located in the vicinity by increasing compliance with rules restricting pedestrian activities to designated trails and reducing erosion problems adjacent to trails.

ENVIRONMENTAL CONSEQUENCES

Under this and all other alternatives, the existing housing and maintenance area would be maintained in its current location. This would be a major benefit to archeological resources by confining the zone of disturbance from residential and maintenance activities to this previously disturbed area.

Under this and all other alternatives, the new lands added to the monument in 1996 would be surveyed and fenced. An archeological inventory of the boundary would be performed prior to installing the fence, to ensure that no archeological sites are inadvertently impacted. The fencing would be a major benefit to archeological resources by restricting off-road vehicular trespass on the monument. Furthermore, fencing and posting the monument boundaries would ensure that visitors are adequately informed of the fact that they are entering a national monument where certain specific activities such as hunting, camping and woodcutting, which can have both direct and indirect adverse impacts on archeological resources, are prohibited.

The current backcountry closure policy limiting visitor access beyond front country areas to ranger-guided tours, and requiring the issuance of permits for researchers and educational groups that have a special need to enter backcountry areas, would remain in effect. The closure will continue to have a major beneficial effect on archeological resources by substantially reducing impacts from unregulated visitation, such as collection of artifacts, destabilization of walls, soil compaction, social trailing, vandalism, and so on, thereby reducing the need for future impact mitigation.

Unlike the other two alternatives, the No-Action Alternative would involve no new construction, no additional trail developments and no road realignments, so there would be no new impacts to resources as a result of this alternative. Visitors would

continue to have unguided access to six cliff-dwelling sites and two surface-dwelling sites within the monument along the Island and Rim Trails. In addition, they would continue to visit five cliff-dwelling sites and one surface site via seasonal ranger-guided tours along the Ranger Cabin/Ledge Trail. The remaining sites in the monument would continue to be closed to visitor use.

Archeological resources adjacent to or easily accessible from public use areas would continue to be vulnerable to surface disturbance, inadvertent damage, soil compaction, and vandalism. Inadvertent impacts include knocking top course stones loose by walking on or leaning against ruin walls, touching original plasters, picking up or otherwise displacing pottery sherds and other artifacts, compacting cultural deposits, and creating social trails (which ultimately leads to erosion problems and destabilization of original architecture), plus the incremental cumulative effects of thousands of people walking around and through rooms. Intentional vandalism includes removing artifacts, inscribing graffiti, dismantling walls, and probing or digging in sites. A loss of the surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence would result. Some of these impacts could be mitigated through additional stabilization of site architecture (all front country sites have already been stabilized to some degree), rehabilitating social trails, and/or systematically collecting surface artifacts for long-term curation; however, over the long term, these management actions would detrimentally affect site integrity. Occasionally, the public would also adversely affect other sites through unauthorized pedestrian and vehicular access to backcountry areas of the monument.

In summary, past management strategies have limited most impacts at archeological

sites to eight heavily stabilized sites on the Island and Rim Trails and, since 1987, to five partially stabilized sites on the Ranger Cabin/Ledge Trail. Implementation of the No- Action Alternative would continue to provide access to these previously stabilized sites. In addition, an unknown number of sites in the "new lands" area of the monument would continue to receive impacts from uses that currently occur in these remote sections of the monument; however, these impacts would be substantially reduced by fencing and posting the monument boundaries. Overall, the current management approach has and would continue to limit adverse impacts to a relatively small number of previously stabilized sites. Therefore, the No- Action Alternative would continue to provide major long- term benefits to the long- term integrity of the majority of archeological resources in Walnut Canyon National Monument.

CUMULATIVE EFFECTS

Past management strategies have limited visitor impacts at archeological sites to eight heavily stabilized sites on the Island and Rim Trails, and since 1987, to five partially stabilized sites on the Ranger Cabin/Ledge Trail. This policy would continue under the No- Action Alternative.

The continuing growth of Flagstaff and ongoing efforts by the Flagstaff Chamber of Commerce to promote visitation to the Flagstaff Area national monuments would ultimately result in increased impacts to the monument's archeological resources. These impacts would primarily result from increased permitted visitor use at front country interpreted sites in the form of incidental artifact collection, inadvertent destabilization of walls, and social trailing, although impacts from vandalism and illegal excavations in backcountry locations would likely increase as well. Continued growth in Flagstaff is also likely to result in significant

development of private lands near the monument boundaries, which is also likely to result in increased unguided visitation to backcountry archeological sites within the monument.

Within the Flagstaff region generally, construction of new roads, housing subdivisions, mines, and other developments would continue to cause destruction of individual archeological sites. As the population of Flagstaff grows, recreational demands on USFS lands and resources would continue to increase, resulting in the potential for additional degradation of archeological sites. As archeological sites are degraded and destroyed outside the park, the relative rarity and importance of the protected archeological resources within the monument would increase.

Road closures on Forest Service lands adjacent to the park could have a long- term major beneficial effect on archeological resources both inside and outside the park boundaries, by reducing levels of visitation and associated impacts (artifact collection, graffiti, etc.) and by reducing impacts from vehicles on archeological sites generally (rutting and erosion of topsoil, soil compaction, vegetation damage and removal).

Development of the inholding, either for private or commercial purposes, could have a long- term detrimental impact of archeological resources within and adjacent to the monument. Adverse impacts could include destruction of individual sites by the construction of new facilities or degradation of resource values from increasing visitation impacts (artifact collection, trampling, graffiti, etc.) or from introducing new recreational activities (camping, fishing, horseback riding) in this remote corner of the monument.

CONCLUSION

The No- Action Alternative would have a major beneficial effect on maintaining the long- term integrity of the majority of archeological resources within the monument by concentrating visitor activities and park management impacts on previously disturbed and stabilized sites.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Impacts from installation of new waysides, upgrading of trails and facilities to accommodate accessibility, and fencing of the new monument boundary would be the same as described under the No- Action Alternative. Existing maintenance facilities and housing would be retained.

Under Alternative 1, access to the park via the existing entrance road would be the same as under the No- Action Alternative.

No archeological sites would be impacted by the construction of the I- 40 orientation pullout. At least two sites would be permanently obliterated by construction of a new parking lot and trail south of FR303. An unknown number of archeological sites (but probably fewer than 10) could be damaged or destroyed as a result of constructing the north rim scenic drive. (The exact number of sites that would be affected is uncertain, because intensive

archeological inventories have not been completed for this east canyon area).

Alternative 1 would involve relocation of administrative functions from the visitor center to a new administrative facility adjoining a new parking area. Preliminary orientation functions would be relocated to the I- 40 junction area. Over the long term, orientation provided at I- 40 could reduce damage to archeological resources by giving visitors basic resource protection information before they enter the park. Relocating administrative functions would free up space in the visitor center that could potentially be used to increase public awareness of resource issues/impacts in general and thereby improve long- term integrity of archeological resources. Expanding and upgrading interpretive media could potentially improve long- term and scientific integrity of archeological resources through improved education of visitors about the significance, importance, and fragility of archeological resources and the most effective means of reducing human impacts to park resources.

Alternative 1 would provide visitor access to many areas on the north rim that are currently closed to the public (hiking, biking, and horseback riding in the northwest corner, guided hikes east and west of the visitor center and at First Fort, plus motorized sightseeing along the north rim scenic drive). Through ranger- guided hikes, visitors would also be able to enter a large portion of the backcountry not currently open to visitation. Numerous archeological sites could potentially be impacted by increased visitation to areas of the monument that are currently closed. Increasing visitation could affect the long- term integrity of archeological resources through the direct actions of visitors, as well as by secondary actions that could be taken by NPS staff to manage visitor impacts. Direct visitor impacts include displacement and collection of artifacts, damage to

petroglyphs from touching or tracing, destabilization of standing walls by sitting and climbing on them, and increasing rates of erosion caused by soil trampling and social trailing. NPS actions could include stabilizing walls to withstand visitor impacts, which alters the original architectural fabric of the ruins, or constructing trails or physical barriers, which could result in disturbance of archeological deposits.

At least 50 archeological sites would be subject to visitation impacts through guided tours, excluding those sites in the recently acquired lands. Numbers of sites that would be impacted by natural area recreation and visitor use in areas adjoining the north rim scenic drive are unknown, because these new lands have not been inventoried. In the short run, guided hikes in the First Fort area would result in the creation of new trails to and through archeological sites. Over the long term, trails would need to be formalized in the First Fort area to minimize impacts from erosion and social trailing. Moderate adverse impacts to archeological site integrity could result from cumulative loss of surface artifacts, increased soil compaction, social trailing and erosion, graffiti, a possible increase in illegal excavation of sites (as locations of sites become widely known), and from NPS actions that are subsequently taken to mitigate these various impacts. Some of the adverse impacts to archeological resources could be partially offset by the intensive, person-to-person education of visitors participating in guided adventures. Over the long term, however, the cumulative effects of providing additional visitor access to such a larger number of nonrenewable archeological resources would be major and adverse.

In addition to the impacts noted above, an estimated additional 6 to 10 sites would probably require excavation and/or stabilization within the expanded Extended

Learning Zones to accommodate new trails, waysides, rest rooms, and so forth.

CUMULATIVE EFFECTS

Cumulative effects would be the same as described for the No- Action Alternative, with the following exceptions:

Past management strategies have limited visitor impacts at archeological sites to eight heavily stabilized sites on the Island and Rim Trails, and since 1987, to five partially stabilized sites on the Ranger Cabin/Ledge Trail. Implementation of Alternative 1 would open up dozens of additional sites to visitation. Incremental impacts from increased visitation would eventually result in loss of artifacts, destabilization of walls, increased soil compaction and erosion, and increased social trailing and erosion. Some of these impacts could be mitigated through stabilizing site architecture, rehabilitating social trails, and/or systematically collecting surface artifacts; however, the long-term implications of these management actions would detrimentally affect site integrity. In addition, an estimated 10- 20 sites would be impacted or obliterated as a result of construction of new facilities, roads, and trails. These impacts would require mitigation through some form of data recovery.

CONCLUSION

Alternative 1 would have a major long-term adverse effect on at least 20% of the archeological resources (60- 70 archeological sites) in the monument. This adverse effect would be offset to some degree by benefits derived from visitors receiving more education and an enhanced appreciation of the resources from expanded interpretive media and from participating in guided adventures. However, the net effect would be a significant increase in the degradation of sensitive archeological resources caused by construction of the north rim scenic drive

ENVIRONMENTAL CONSEQUENCES

and the increased visitor access to backcountry resources, and the inevitable impacts that would result from increasing visitation to archeological sites. The direct, indirect and cumulative impacts of Alternative 1 would have a major long- term adverse effect on archeological resources in the monument. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

The visitor center and administrative offices would be relocated to I- 40 under this alternative. Construction of new facilities could impact or destroy an unknown number of archeological resources. The exact number of archeological resources that would be affected by proposed developments is unknown, because archeological surveys have not been completed for all areas of the monument, but the number is expected to be very low, if any at all are affected. Loss of resources could be partially mitigated through excavation, documentation and curation.

From a management standpoint, the relocation of visitor orientation functions to a larger visitor center near I- 40 could enhance long- term integrity of

archeological resources by providing visitors with more education about the importance/significance/fragility of cultural resources and means of reducing their impacts on them before they have a chance to come in contact with them. On the other hand, relocation of visitor center/administrative offices could have a long- term moderate adverse effect by decreasing uniformed presence in proximity to the archeological sites and slowing ranger response time to resource violations. The presence of uniformed personnel has been demonstrated to be an effective deterrent to inappropriate behaviors that result in resource damage. Thus, the frequency and extent of damage to resources could be greater under this alternative than if the visitor center were to remain at its current location on the rim.

Physical removal of the Mission 66 addition to the visitor center would have no effect on archeological resources. Rehabilitating the area where the nonhistoric portion of the visitor center currently stands also would not affect archeological resources.

The addition of guided hikes in the eastern portion of the monument and expansion of the Extended Learning Zone to include the rim area west of visitor center would subject more cultural resources to visitation damage and increase the need for mitigation of impacts. Within the Extended Learning Zone, a moderate loss of integrity to approximately 6- 12 archeological resources would occur because of increased visitation and the need to stabilize sites and/or harden and expand trails to accommodate more intensive use. These impacts could be partially mitigated through excavation and long- term curation. Expansion of the Extended Learning Zone would also require increased preservation maintenance and hardening of at least six sites to accommodate increased visitor traffic and use.

An unknown number of archeological sites (but at least 8) would be impacted by increased visitation in the eastern canyon through the implementation of guided adventures in an area where none currently occur. Visitation impacts could include loss of artifacts, increased soil compaction, trailing and erosion, plus the need to stabilize structures to withstand repeated visitation. Impacts could also include increased graffiti and other forms of vandalism, as the sites and means of access to them become known to the public. These effects on the resource would be moderately adverse over the long term. On the other hand, increased impacts could be offset to some extent by greater public awareness of resource issues and impacts acquired through participating in guided adventures and by an increased NPS presence in the eastern monument.

Closure of the entrance road at night would lessen impacts to archeological sites along the entrance road from off-road vehicular traffic, evening picnickers, and illegal campers. There would be no change from existing condition in terms of impacts in other areas of the park, because these areas are already closed to the public.

CUMULATIVE EFFECTS

Cumulative impacts would be the same as those identified for the No-Action Alternative, with the following exceptions:

Past management strategies have limited visitor impacts at archeological sites to eight heavily stabilized sites on the Island and Rim Trails and, since 1987, to five partially stabilized sites on the Ranger Cabin/Ledge Trail. Implementation of Alternative 2 would open up at least eight additional sites to visitation impacts. In addition, approximately six sites would require stabilization and routine preservation maintenance to accommodate increased visitation in the expanded Extended Learning Zone. Alternative 2 would have a

long-term moderate adverse effect on at least 14 archeological sites. Adverse impacts would be offset to some degree by benefits derived from visitors receiving more education and an enhanced appreciation of the resources from participating in interpretive programs. However, relative to existing conditions, the net effect would be a moderate increase in the degradation of sensitive archeological resources caused by increased visitor access and associated visitation impacts, plus loss of site integrity from increased preservation maintenance and the inevitable need for future modifications of the landscape (i.e., designated trails) to accommodate visitor use in additional areas.

CONCLUSION

Alternative 2 would result in moderately adverse long-term effects to approximately 14-20 archeological resources as a result of implementing this alternative. There would be an overall reduction of archeological integrity at these sites, but not to the extent that the resources would become ineligible for listing in the National Register of Historic Places. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

As described under Unavoidable Adverse Effects (below), the continuing use of

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existing visitor centers and trails would directly and indirectly affect archeological resources in the immediate vicinity. Archeological resources adjacent to, or easily accessible from, public areas would continue to be vulnerable to surface disturbance, inadvertent damage, soil compaction, removal of artifacts, and vandalism. A loss of the surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence would result. However, the most heavily impacted front country sites are already documented, so, although the actual artifacts and contextual evidence are lost, information is retained through drawings, photographs, and reports. Overall, the effects of the No- Action Alternative would be moderately beneficial for maintaining the long- term integrity of the majority of archeological resources in the monument, because visitor impacts would continue to be concentrated at the previously stabilized front country sites. The remaining resources would continue to be protected in areas of the monument that are closed to public use.

Alternative 1 would have a long- term adverse effect on an estimated 20% of the archeological resources in the monument, which would be offset to some degree by benefits derived from visitors receiving more education and an enhanced appreciation of the resources from participating in interpretive programs. However, the net effect would be a major increase in the degradation of sensitive archeological resources caused by the construction of the north rim scenic drive and the increased visitor access to numerous additional backcountry resources and the inevitable impacts that result from increasing visitation to archeological sites. The cumulative impact of Alternative 1 would be a major long- term adverse effect to archeological resources in the monument, some of which would be irreversible.

Alternative 2 would not result in a major adverse effect to archeological resources. There would be some moderately adverse long- term effects to archeological resources as a result of this alternative.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

Although there would be short- term effects on archeological resources caused by construction activities under all action alternatives, data recovery efforts would limit the long- term loss of the site information.

Unavoidable Adverse Impacts

Under the No- Action Alternative, the continuing use of existing visitor centers and trails would directly and indirectly affect archeological resources in the immediate vicinity. Archeological resources adjacent to, or easily accessible from, public areas would continue to be vulnerable to surface disturbance, soil compaction, inadvertent damage, artifact collection and vandalism. Impacts to archeological sites from inappropriate visitor activities (artifact collection, graffiti, etc.) would continue to be a major long- term problem at the front country and some backcountry sites. Overall, however, the effects of the No- Action Alternative would be moderately beneficial to the long- term integrity of the archeological resources.

Alternative 1 would have a long- term adverse effect on an estimated 20% of the archeological resources in the monument, which would be offset to some degree by benefits derived from visitors receiving more education and an enhanced appreciation of the resources from participating in interpretive programs. However, the net effect would be a major increase in the degradation of sensitive archeological resources caused by construction of the north rim scenic drive,

increased visitor access to backcountry resources and the inevitable impacts that result from increasing visitation to archeological sites. The cumulative impact of Alternative 1 would be a major long-term adverse effect to archeological resources in the monument.

Alternative 2 would not result in a major adverse effect to archeological resources. There would be moderately adverse long-term effects to some archeological resources as a result of this alternative, but none would be compromised to the extent that the sites would no longer be eligible for listing on the National Register.

HISTORIC CHARACTER OF THE BUILT ENVIRONMENT

Methodology

The National Historic Preservation Act requires agencies to take into account the effects of their actions on properties listed or eligible for listing in the National Register of Historic Places. The assessment of impacts to the cultural resources followed a three-step process: (1) determining the area of potential effect of the proposed actions; (2) identifying the cultural resources within the area of potential effect that are either listed in or eligible for listing in the National Register of Historic Places (see Affected Environment); and (3) assessing the extent and type of impacts the proposed action may have upon cultural resources. An impact on a cultural resource occurs if an action has the potential of altering in any way the characteristics that qualify the resource for inclusion in the National Register. If a proposed action diminishes the integrity of such characteristics, it is considered to have an adverse effect. Impacts may occur later than, or at a distance from the location of a proposed action are also potential impacts of the

action, and are considered to be indirect impacts.

For the purposes of this analysis the following will be used to describe the intensity of impacts to the built environment and cultural landscapes at Walnut Canyon National Monument:

Negligible: The impact is at the lowest levels of detection, barely perceptible, and not measurable.

Minor: The impact is slight, but detectable. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed historic structure, cultural landscape, or historic district.

Moderate: The impact is readily apparent. For a National Register eligible or listed historic structure, cultural landscape, or historic district, the impact changes a character defining feature(s) of the resource but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.

Major: The impact is severe or of exceptional benefit. For a National Register eligible or listed historic structure, cultural landscape, or historic district, the impact changes a character defining feature(s) of the resource, diminishing the integrity of the resource to the extent that it is no longer eligible or listed in the National Register.

Effects of No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

The Mission 66 visitor center addition has a long-term moderate, adverse impact on the CCC visitor center. During Mission 66 construction a portion of the CCC visitor center roof was altered to accommodate the addition, and interior modifications changed the configuration of the small space for offices and a lunchroom. In the 1970s a pitched roof was added to the

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remaining portion of the CCC visitor center and to the Mission 66 addition. Although the CCC visitor center was modified extensively, it may yet be eligible for listing in the National Register.

The ranger cabin and the CCC and Mission 66 facilities have a long- term moderate adverse visual impact on the prehistoric cultural landscape. However, the CCC buildings were designed and constructed of native material to blend with the natural and historic setting partially mitigating the visual impact. Ranger cabin is located at a distance from the CCC and Mission 66 developed areas; consequently, they do not impact the ranger cabin landscape. The Mission 66 designed landscape has a long- term moderate adverse visual impact on the CCC landscape, primarily from the construction of a large maintenance facility within view of the CCC ranger residences. The Mission 66 houses were constructed to blend with the natural surroundings. More recently a trailer house was added to the housing area adjacent to the CCC residences, creating a long- term moderate adverse visual impact to that landscape.

Installation of new wayside exhibits would have a minor visual impact on the cultural landscapes (prehistoric and CCC cultural landscape and Mission 66 cultural landscape). To mitigate the impact, signs would be constructed of material that is compatible with the historic setting and/or the natural surroundings, as appropriate.

Installation of new exhibits in the Mission 66 visitor center would have long- term minor adverse impact by changing the planned Mission 66 visitor center circulation pattern. However, the new exhibits would not adversely affect any character defining features of the structure's interior. If any materials were removed during rehabilitation, they would be evaluated to determine their value to the park's museum collections and/or for their

comparative use in future preservation work at the site. All work would be undertaken in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (1995).

Facilities would be upgraded to accommodate and meet current accessibility standards. Making historic buildings and structures accessible to the mobility impaired could result in the loss of historic fabric or the introduction of new visual and nonhistoric elements, resulting in long- term minor adverse effects. For example, the doorways of buildings could require widening and ramps or wheelchair lifts could be added to the exterior of buildings. The park would strive, however, to develop design solutions to accessibility requirements that minimize impacts to cultural resources.

Fencing the boundary of the new lands of the monument would have a long- term minor, adverse visual impact on the surrounding prehistoric landscape, and could damage landscape features (e.g., agricultural alignments etc.). To partially mitigate the visual impact and the damage to landscape features, the fence would be sited to avoid as many landscape features as possible and be constructed of material compatible with the natural setting.

CUMULATIVE EFFECTS

The park boundaries represent the geographic area in which cumulative impacts that affect the built environment and cultural landscapes of Walnut Canyon National Monument were identified.

Past development has altered the prehistoric landscape and the CCC built environment. However, only minor modifications have been made to the Mission 66 designed landscape. Ranger cabin was constructed in 1904 as a ranger residence/visitor contact station and included several outbuildings and gardens.

The cabin was constructed in a prehistoric agricultural area. The CCC constructed a small visitor center, detached rest rooms, the Island Trail, two ranger residences, and a maintenance building in the late 1930s and early 1940s. The CCC maintenance building has since burned down. More recently, stand-alone garages were constructed adjacent to the CCC structures, creating a long-term moderate adverse visual impact to the planned CCC residential area. During the Mission 66 program a visitor center was constructed and attached to the existing CCC visitor center, obscuring the smaller rustic structure. Two houses, a maintenance building, storage area, and the Rim Trail were also constructed as part of the Mission 66 program. A new entrance road and parking area at the visitor center were redesigned. Modifications to the Mission 66 designed landscape include the addition of a pitched roof to both the CCC and Mission 66 portions of the visitor center, construction of a book sales area at the rear of the visitor center, installation of wheelchair lifts, and construction of an accessible rest room adjacent to the Mission 66 addition. The addition of the pitched roof and accessible rest room is a long-term moderate, adverse visual impact to the prehistoric cultural landscape of the canyon. The pitched roof detracts from both the Mission 66 and CCC visitor centers, originally constructed with flat roofs to blend with the canyon setting. The Rim Trail would be upgraded to accommodate and meet current accessibility standards. The majority of the trail would remain the same; however, new sections of the trail would be constructed in areas not previously disturbed. To reduce the long-term moderate, adverse visual impact to the surrounding prehistoric landscape and Mission 66 landscape, new sections of the trail, would be constructed of materials compatible with the natural surrounding and historic setting. Because the primary, original design elements of the

Mission 66 designed landscape are still intact, the landscape is considered to be potentially National Register eligible (however, this landscape has yet to be formally evaluated). Any future alterations of the designed landscape and to historic structures could bring the integrity of the landscape and structures as a whole (especially design) down to the level where National Register eligibility would be questioned.

The CCC built environment and the prehistoric cultural landscape have been extensively modified by the Mission 66 development. The CCC cultural landscape included a small rustic visitor center, outbuildings, two residences and a maintenance shed. The Mission 66 development included a new entrance road where visitors could drive to the canyon rim and see the canyon from an expanded visitor center, parking area, and the Rim Trail. Two ranger residences and a large maintenance facility were constructed in the CCC housing area. Construction of the Mission 66 facilities created a long-term moderate, adverse visual impact on the intimate planned CCC landscape. Construction of the ranger cabin and associated outbuildings, the CCC residences, visitor center, trail and maintenance building, and the Mission 66 development have damaged or destroyed prehistoric landscape features and create a long-term moderate, adverse visual impact on the prehistoric landscape. The ranger cabin and CCC developments were limited in size and were constructed of native materials blending with the natural setting. The Mission 66 development and more recent changes, including the addition of a trailer house and the accessible rest room, were not designed to blend with the setting, and consequently, have a long-term moderate, adverse visual impact on the natural setting. Because these landscapes have not been evaluated, it is difficult to

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determine National Register eligibility. However, because the primary design elements of the CCC landscape and primary, original features of the prehistoric cultural landscape remain intact, the landscapes are considered to be potentially National Register eligible.

CONCLUSION

This alternative would have minor to moderate long- term visual impacts on the prehistoric and CCC landscapes, and a long- term moderate, adverse impact on the CCC visitor center. There would be an overall reduction of integrity in the prehistoric and CCC landscapes, but not to the extent that they would no longer be eligible to be listed in the National Register of Historic Places.

Any future alterations to the prehistoric, CCC or Mission 66 landscapes, in conjunction with the minor to moderate cumulative impacts of previous changes and this alternative, could result in moderate cumulative impacts to the prehistoric, CCC and Mission 66 landscapes.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Impacts resulting from installation of waysides and exhibits and upgrade of facilities to accommodate accessibility

would be the same as identified under the No- Action Alternative.

Impacts to the CCC and Mission 66 housing and maintenance area would be the same as described for the No- Action Alternative.

Impacts resulting from installation of a boundary fence would be the same as those described for the No- Action Alternative.

Construction of a new parking area south of FR303, construction of orientation waysides, and installation of a gate at the intersection of FR303 and the park road would have long- term moderate, adverse visual impacts on the surrounding prehistoric cultural landscape. To partially mitigate the impact, the parking lot, orientation exhibits, and gate would be situated to reduce visual impacts and would be constructed of materials that are compatible with the natural surroundings.

Construction of administrative offices would have long- term moderate, adverse impacts to the prehistoric cultural landscape by damaging or destroying landscape features and would have long- term moderate visual impacts as well. The administrative offices would be sited to avoid as many landscape features as possible and situated to reduce visual impact. The administrative office would be constructed of materials that are compatible with the natural surroundings.

Adaptively rehabilitating the visitor center building would neither significantly alter the present form or character of the structure's exterior nor adversely affect any significant character defining features of the structure's interior. If any materials were removed during rehabilitation, they would be evaluated to determine their value to the park's museum collections and/or for their comparative use in future preservation work at the site. All rehabilitation work would be undertaken in accordance with the Secretary of the Interior's Standards for the

Treatment of Historic Properties (1995). Converting the visitor center to accommodate visitor orientation, new exhibits, and group presentations would have a long- term moderate impact on the building.

Upgrading the existing primitive road along the north rim to accommodate motorized sightseeing would have long- term moderate adverse impacts on the prehistoric cultural landscape by damaging or destroying landscape features. The road would need to be graded and widened, which could damage field houses and associated agricultural features that may be adjacent to the road, or previously cut through by the road. However, the road would be designed to avoid as many landscape features as possible and would be constructed of materials that are compatible with the natural surroundings. Installation of new wayside exhibits along the scenic drive would have minor long- term visual impacts to the prehistoric landscape. To partially mitigate the visual impact, signs would be designed and constructed of material compatible with the natural surroundings. Constructing the scenic drive to the east end of the monument would have long- term moderate, adverse impact on the planned Mission 66 experience by changing the way visitors currently see Walnut Canyon. The Mission 66 designed experience brought visitors to the edge of the canyon, to leave their cars behind and experience the canyon by foot in a quiet natural setting. The new scenic drive would create a motorized visit disturbing the tranquility (and the feeling of isolation) of the canyon.

Constructing a new pullout (and possible entrance station) and/or turnaround at the junction of I- 40 and the park road would have long- term moderate adverse visual impact on the surrounding prehistoric cultural landscape. The pullout and entrance station would be situated to reduce visual impact and would be constructed of

materials that are compatible with the natural surroundings.

Construction of a trail to First Fort would have long- term moderate impacts on the prehistoric cultural landscape by damaging or destroying landscape features. However, the trail would be designed to avoid as many landscape features as possible and would be constructed of material compatible with the natural surrounding and historic setting. Installation of new wayside exhibits along the trail would have minor long- term adverse visual impacts to the surrounding prehistoric landscape. Like the trail, the signs would be constructed of material compatible with the natural and historic setting.

Formalizing a trail to ranger cabin using the existing primitive road would have a long- term moderate, adverse visual impact on the surrounding prehistoric landscape. The trail would be hardened and delineated to direct visitors to the cabin. The trail would be designed to blend with the natural setting to reduce the visual impact. Installing wayside exhibits along the trail would have long- term moderate visual impacts. To mitigate the visual impacts, signs would be constructed of material compatible with the natural surrounding and historic setting.

Formalizing a trail to ranger cabin using the existing primitive road would have a long- term minor, adverse impact on the historic ranger cabin landscape. The trail would be hardened and delineated to direct visitors to the cabin. The trail would be designed to blend with the historic setting to partially mitigate the visual impact. Installing wayside exhibits along the trail to the cabin would have long- term minor, adverse visual impact on the historic setting. To partially mitigate the impact, the signs would be constructed of material compatible with the historic setting.

CUMULATIVE EFFECTS

Past and more recent development has altered the prehistoric landscape, the ranger cabin landscape and the CCC built environment. However, only minor modifications have been made to the Mission 66 designed landscape. Ranger cabin was constructed in 1904 as a ranger residence/visitor contact station and included several outbuildings and gardens. The cabin was constructed in a prehistoric agricultural area. The CCC constructed a small visitor center, detached rest rooms, the Island Trail, two ranger residences, and maintenance building in the late 1930s and early 1940s east of ranger cabin. The CCC maintenance building has since burned down. More recently stand-alone garages were constructed adjacent to the CCC structures creating a long-term moderate adverse visual impact to the planned CCC residential area. During the Mission 66 program a visitor center was constructed and attached to the existing CCC visitor center, obscuring the smaller rustic structure. Two houses, a maintenance building, storage area, and the Rim Trail were also constructed as part of the Mission 66 program. A new entrance road and parking area at the visitor center were redesigned. Modifications to the Mission 66 designed landscape include the addition of a pitched roof to both the CCC and Mission 66 portions of the visitor center, construction of a book sales area at the rear of the visitor center, installation of wheelchair lifts, and construction of an accessible rest room adjacent to the Mission 66 addition. The addition of the pitched roof and accessible rest room is a long-term moderate, adverse visual impact to the prehistoric cultural landscape of the canyon. The pitched roof detracts from both the Mission 66 and CCC visitor centers, originally constructed with flat roofs to blend with the canyon setting. The Rim Trail would be upgraded to

accommodate and meet current accessibility standards. The majority of the trail would remain the same; however, new sections of the trail would be constructed in areas not previously disturbed. To reduce the long-term moderate, adverse visual impact to the surrounding prehistoric landscape, CCC landscape, and Mission 66 landscape, new sections of the trail, would be constructed of materials compatible with the natural surrounding and historic setting. Because the primary, original design elements of the ranger cabin landscape, CCC and Mission 66 designed landscapes are still intact, and the original primary features of the prehistoric landscape are still intact, the landscapes are considered to be potentially National Register eligible (however, this landscape has yet to be formally evaluated). Any future alterations of the landscapes and to historic structures could bring the integrity of the landscapes and structures as a whole (especially design) down to the level where National Register eligibility would be questioned.

Historical uses of the east end of the monument, including grazing, logging, and construction of the Santa Fe dam in the late 1800s, have had a long-term moderate, adverse impact on the prehistoric cultural landscape. Construction of logging roads, railroad grades and the Santa Fe dam damaged or destroyed prehistoric landscape features (field houses, agricultural features). Although the above modifications to the east end of the monument have taken place, the majority of primary features (prehistoric landscape features) remain intact; consequently, the prehistoric landscape is considered potentially National Register eligible (however, this landscape has yet to be formally evaluated). Any future alterations of the prehistoric landscape beyond the scope of what is proposed in this alternative could bring the integrity of the landscape as a whole down to the level

where National Register eligibility would be questioned.

CONCLUSION

This alternative would have long- term moderate, adverse impacts on the prehistoric landscape and long- term moderate adverse impacts on the CCC/Mission 66 visitor center. There would be an overall reduction of historic integrity of the prehistoric landscape and the CCC/Mission 66 visitor center, but not to the extent that they would no longer be potentially eligible to be listed in the National Register of Historic Places. Any future alterations to the prehistoric landscape or the visitor center, in conjunction with the moderate, adverse cumulative impacts of previous changes and this alternative could result in moderate, adverse cumulative impacts to the prehistoric landscape and the CCC/Mission 66 visitor center.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2: (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Impacts resulting from installation of waysides and exhibits and upgrade of facilities to accommodate accessibility would be the same as those described for the No- Action Alternative.

Impacts to the CCC and Mission 66 housing and maintenance area would be the same as

those described for the No- Action Alternative.

Impacts resulting from installation of a boundary fence would be the same as those described in the No- Action Alternative.

Construction of a new visitor center at the junction of I- 40 and the park entrance road would have long- term moderate impact on prehistoric landscape features and long- term moderate visual impact on the surrounding landscape. To partially mitigate the impacts the visitor center would be sited to avoid as many landscape features as possible and be constructed of material compatible with the natural surroundings.

Removing the Mission 66 portion of the visitor center would have long- term moderate beneficial impact on the CCC visitor center. The Mission 66 portion of the visitor center, including recent additions of the pitched roof and book sales area obscure the small, rustic structure.

Removing the Mission 66 portion of the visitor center and the pitched roof would remove the long- term moderate, adverse visual impact on the prehistoric landscape of the canyon. The CCC structure was constructed to blend with the setting, and is not visible from the Island Trail. Adaptively rehabilitating the CCC visitor center would neither significantly alter the present form or character of the structure's exterior nor adversely affect any significant character defining features of the structure's interior. If any materials were removed during rehabilitation, they would be evaluated to determine their value to the park's museum collections and/or for their comparative use in future preservation work at the site. All rehabilitation work would be undertaken in accordance with the Secretary of the Interior's Standards for Treatment of Historic Properties (1995). Converting the visitor center to accommodate educational activities and offices would have a long- term minor to moderate impact on the

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building. Removing the Mission 66 portion of the visitor center would have a long- term moderate adverse impact on the planned Mission 66 experience and designed landscape.

Installation of gates at the junction of the park entrance road and I- 40 and on either side of FR303 would have long- term minor visual impact on the surrounding prehistoric landscape. To reduce the visual impact the gates would be constructed of material compatible with the natural and cultural setting.

Formalizing a trail to ranger cabin using the existing primitive road would have a long- term moderate, adverse visual impact on the surrounding prehistoric landscape. The trail would be hardened and delineated to direct visitors to the cabin. The trail would be designed to blend with the natural setting to reduce the visual impact. Installing wayside exhibits along the trail would have long- term moderate visual impacts. To mitigate the visual impacts, signs would be constructed of material compatible with the natural surrounding and historic setting.

Formalizing a trail to ranger cabin using the existing primitive road would have a long- term minor, adverse impact on the historic ranger cabin landscape. The trail would be hardened and delineated to direct visitors to the cabin. The trail would be designed to blend with the historic setting to partially mitigate the visual impact. Installing wayside exhibits along the trail to the cabin would have long- term minor, adverse visual impact on the historic setting. To partially mitigate the impact, the signs would be constructed of material compatible with the historic setting.

Construction of a parking area and trail in the east end of the monument would have long- term moderate, adverse impact on prehistoric landscape features by damaging or destroying field houses and agricultural features. Construction of the trail and

parking area would also have long- term moderate adverse visual impact on the surrounding prehistoric landscape. To reduce the adverse impacts, the parking area would be sited to avoid as many features as possible and the trail would be constructed of material compatible with the natural surrounding.

CUMULATIVE EFFECTS

Past development has altered the prehistoric landscape and the CCC built environment. However, only minor modifications have been made to the Mission 66 designed landscape. Ranger cabin was constructed in 1904 as a ranger residence/visitor contact station and included several outbuildings and gardens. The cabin was constructed in a prehistoric agricultural area. The CCC constructed a small visitor center, detached rest rooms, the Island Trail, two ranger residences, and a maintenance building in the late 1930s and early 1940s. The CCC maintenance building has since burned down. More recently stand- alone garages were constructed adjacent to the CCC structures creating a long- term moderate adverse visual impact to the planned CCC residential area. During the Mission 66 program a visitor center was constructed and attached to the existing CCC visitor center, obscuring the smaller rustic structure. Two houses, a maintenance building, storage area, and the Rim Trail were also constructed as part of the Mission 66 program. A new entrance road and parking area at the visitor center were redesigned. Modifications to the Mission 66 designed landscape include the addition of a pitched roof to both the CCC and Mission 66 portions of the visitor center, construction of a book sales area at the rear of the visitor center, installation of wheelchair lifts, and construction of an accessible rest room adjacent to the Mission 66 addition. The addition of the pitched roof and accessible rest room is a long- term moderate, adverse visual impact to the

prehistoric cultural landscape of the canyon. The pitched roof detracts from both the Mission 66 and CCC visitor centers, originally constructed with flat roofs to blend with the canyon setting. The Rim Trail would be upgraded to accommodate and meet current accessibility standards. The majority of the trail will remain the same; however, new sections of the trail would be constructed in areas not previously disturbed. To reduce the long- term moderate, adverse visual impact to the surrounding prehistoric landscape and Mission 66 landscape, new sections of the trail, will be constructed of materials compatible with the natural surrounding and historic setting. Because the primary, original design elements of the Mission 66 designed landscape are still intact, the landscape is considered to be potentially National Register eligible (however, this landscape has yet to be formally evaluated). Any future alterations of the designed landscape and to historic structures could bring the integrity of the landscape and structures as a whole (especially design) down to the level where National Register eligibility would be questioned.

Cumulative impacts to the Mission 66 landscape would be the same as described for the No- Action Alternative, but with the following changes. Any future alterations of the designed landscape, in conjunction with the adverse impacts of both past changes and this alternative, would bring the integrity of the landscape as a whole (especially design) down to the level where it is no longer National Register eligible. However, this landscape has not yet been formally evaluated. The long- term major, adverse impacts and most importantly, any potential impacts of future actions could result in major, adverse cumulative impacts to the Mission 66 designed landscape.

Cumulative impacts to the CCC landscape would be the same as described for the No-

Action Alternative, but with the following changes. Removing the Mission 66 portion of the visitor center from the smaller, rustic CCC visitor center would have a major long- term benefit to the CCC visitor center by returning the developed area to a more intimate setting.

Because few alterations have occurred to the ranger cabin landscape, the landscape is considered potentially National Register eligible (however, this landscape has not yet been formally evaluated). Any future alterations of the ranger cabin landscape beyond the scope of what is proposed in this alternative could bring the integrity of the landscape as a whole down to the level where National Register eligibility would be questioned.

Cumulative impacts to the prehistoric landscape would be the same as those described for the No- Action Alternative, but with the following changes. Removing the Mission 66 portion of the visitor center from the CCC visitor center would reduce the visual impact of the visitor center from the prehistoric landscape of the canyon. Because the primary design elements of the prehistoric landscape of the monument remain in tact, the landscape is considered to be potentially National Register eligible.

CONCLUSION

This alternative would have long- term moderate adverse impacts on the prehistoric landscape, the ranger cabin landscape, and the Mission 66 landscape. However, this alternative would also have long- term major benefit to the prehistoric landscape by removing the Mission 66 portion of the visitor center and reducing the visual impact to the prehistoric canyon landscape. There would also be a long- term major benefit to the CCC visitor center by returning the developed area to a more intimate, rustic setting. There would, however, be an overall reduction of historic integrity in the landscapes (prehistoric,

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ranger cabin, CCC and Mission 66), but not to the extent that they would no longer be eligible to be listed in the National Register of Historic Places. Any future alterations of the landscapes, in conjunction with the adverse cumulative impacts of previous changes and the preferred alternative, could result in major, adverse cumulative impacts to each landscape.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

There would be an irreversible/irretrievable commitment of resources under Alternative 2. The Mission 66 portion of the visitor center would be removed.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

The continuing lack of a cultural landscape inventory would lead to a long-term loss of the integrity of these resources.

Unavoidable Adverse Impacts

The No-Action Alternative would have long-term moderate, adverse impact on the prehistoric cultural landscape from past development (ranger cabin, CCC, Mission 66 and from more recent alterations). There would be a long-term minor, adverse impact to all landscapes (prehistoric, ranger cabin, CCC and Mission 66) from installation of new wayside exhibits. There would be a long-term minor, adverse

impact to upgrade historic facilities (CCC and Mission 66) to accommodate and meet current accessibility standards.

Alternative 1 would have the same long-term moderate, adverse impacts to the prehistoric cultural landscape from past development including ranger cabin, CCC, Mission 66 and recent alterations). There would be long-term minor and moderate, adverse visual impacts to all landscapes from installation of new wayside exhibits. Construction of administrative offices and a new parking area south of FR303 would have long-term moderate, adverse impact on the surrounding prehistoric landscape and would damage or destroy landscape features (such as field houses and associated agricultural alignments). Converting the visitor center to accommodate large group presentations and new exhibits would have long-term moderate, adverse impact on the historic structure, but would not affect any character defining features. Trail construction to the ranger cabin area would have long-term moderate, adverse visual impacts on the prehistoric landscape surrounding the cabin, but would have long-term minor, adverse visual impact on the ranger cabin landscape. Formalizing a scenic drive to the east end of the monument would have long-term moderate, adverse visual impact on the surrounding prehistoric landscape, and would have long-term moderate, adverse impact on the planned Mission 66 drive-up, park, and see the park on foot experience. Motorized sightseeing would disrupt the quiet of the canyon setting.

Alternative 2 would have the same long-term moderate, adverse impacts to the prehistoric cultural landscape from past development including ranger cabin, CCC, Mission 66 and recent alterations). There would be long-term minor and moderate, adverse visual impacts to all landscapes from installation of new wayside exhibits. Construction of a new visitor center at the

junction of I- 40 and the park entrance road would have long- term moderate, adverse visual impact on the surrounding cultural landscape, and could damage or destroy landscape features (field houses and associated agricultural alignments). Removing the Mission 66 portion of the visitor center would have long- term moderate, adverse impact on the planned Mission 66 experience by eliminating the observation room. Trail construction to the ranger cabin area would have long- term moderate, adverse visual impacts on the prehistoric landscape surrounding the cabin, but would have long- term minor, adverse visual impact on the ranger cabin landscape. Construction of a parking area and trail at the east end of the monument would have long- term moderate, adverse visual impact on the surrounding prehistoric landscape, and would damage or destroy prehistoric landscape features.

LONG-TERM INTEGRITY OF ETHNOGRAPHIC RESOURCES

Methodology

Ethnographic resources are those cultural and natural resources to which park-associated communities ascribe cultural significance and that continue to play a role in a community's identity and way of life. Only members of the communities to whom the resources hold cultural value can determine ethnographic resources and potential impacts to them. After initial consultation meetings with representatives of several American Indian tribes having possible traditional associations with park lands and resources, the tribes determined that the Hopi, Zuni, and Navajo Tribes have the closest association with resources that could be affected by various management alternatives. The National Park Service entered into small contracts with each of these tribes to visit the parks and identify culturally significant resources that might be

affected by various management alternatives. The Hopi, Zuni, and Navajo Tribes submitted information on ethnographic resources concerns to the National Park Service and participated in the GMP planning process during all stages of development. Because the ethnographic resources identified by the tribes are important in each tribe's history, and because the resources are interconnected with places and resources located throughout customary tribal lands, any impacts to ethnographic resources would be regional in scope. In addition, because ethnographic resources are tied to communities' cultural identities, effects to the resources also have an effect on the communities to which they are tied in perpetuity. Therefore, the duration of impacts to ethnographic resources is forever. Although the tribes themselves did not identify the intensity of potential impacts to ethnographic resources, the National Park Service defines intensity as follows:

Negligible: The impact is at the lower levels of detection.

Minor: The impact is slight, but detectable.

Moderate: The impact is readily apparent.

Major: The impact is severely adverse or exceptionally beneficial.

Any adverse impacts to ethnographic resources would be readily apparent to the tribes to whom the resources hold cultural significance, and in most cases, because impacts to these resources affect cultural identity and ways of life, most adverse impacts would be considered severely adverse. Therefore, most impacts to ethnographic resources, whether beneficial or adverse, would be moderate to major.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Tribal representatives have identified all pre- Columbian archeological sites at Walnut Canyon as ethnographic resources that are important in tribal histories and cultural identities. Any adverse impacts that presently occur to archeological sites as a result of vandalism owing to visitor access would continue to constitute moderate to major adverse effects to ethnographic resources. Conversely, any protection to archeological sites that is currently afforded by lack of visitor access constitutes a major beneficial effect to archeological sites as ethnographic resources.

A moderate to major adverse effect to ethnographic resources could continue under the No- Action Alternative, only to the extent that tribal access to culturally significant resources or places for traditional cultural purposes is limited by the presence of visitors. Conversely, existing conditions for tribal access to ethnographic resources that would continue under the No- Action Alternative would constitute a moderate to major beneficial effect. Adverse effects would be minimized by consultation with associated tribes and continued tribal access to ethnographic resources for traditional cultural purposes.

Moderate to major beneficial effects to ethnographic resources would occur under the No- Action Alternative due to the planning and design of new interpretive messages that is an action common to all alternatives. Improvements and corrections to the interpretive media about the tribal histories and cultural values to which the ethnographic resources are related will have a beneficial effect, provided that associated tribes are involved in interpretive planning.

CUMULATIVE EFFECTS

Prior to the establishment of monument boundaries, the lands encompassed by what is now Walnut Canyon National Monument were part of the customary use areas or traditional lands of several American Indian tribes. These lands included ancestral dwellings or other sites, medicinal plants, prayer offering places, homes of deities, pilgrimage routes, or other places integral to tribal cultural identity and continuity.

With the establishment of federal land management boundaries, including Walnut Canyon National Monument, the construction of fences and the implementation of land use regulations, traditional tribal uses and treatment of resources were precluded over the years. Increased visitation interfered with ceremonial activities at certain places within monument lands. Closure of backcountry disrupted land use patterns. Stabilization of archeological sites and opening them to public visitation violated cultural values about the treatment of ancestral remains. Interpretive messages told stories of the past that differ from tribal knowledge of their own histories.

The cumulative effects of monument operations on ethnographic resources and the tribes associated with them in the past have been major and long term. Under this alternative, some impacts to ethnographic resources would continue into the future, such as the effects of stabilization and visitation, but some impacts, including those due to backcountry closures, would be improved by the development of long- term consulting relationships and agreements between the NPS and the tribes. Conversely, if backcountry closures affect tribal access to the ethnographic resources with which they are affiliated, the adverse effect would be moderate to major and long- term. Cumulative impacts would also be improved by updated interpretive stories

that incorporate tribal versions of their own histories and connections to monument lands and resources.

CONCLUSION

By perpetuating the status quo, the No-Action Alternative would also perpetuate any current and ongoing moderate to major effects to ethnographic resources, both adverse and beneficial.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Any adverse effects to archeological resources as a result of this alternative would also constitute a moderate to major adverse effect to the sites as ethnographic resources. Standard archeological mitigation measures that might recover some of the archeological values of the resources do not serve to mitigate adverse effects on ethnographic values. Potential disturbance of archeological resources due to development, degradation due to high rates of visitation, or vandalism due to increased exposure of more sites to the public, would constitute a moderate to major adverse effect to ethnographic resources. Similarly, lack of tribal ability to access ethnographic resources for traditional cultural purposes due to the constant presence of visitors would also have an adverse effect on ethnographic

resources. The backcountry closures in effect under the actions common to all alternatives could have a major to moderate beneficial impact on ethnographic resources by protecting them from the effects of visitation

Moderate to major beneficial effects to ethnographic resources would occur under Alternative 1 due to the planning and design of new interpretive messages. This is an action common to all alternatives. Improvements and corrections to the interpretive media about the tribal histories and cultural values to which the ethnographic resources are related will have a beneficial effect, provided that associated tribes are involved in interpretive planning.

CUMULATIVE EFFECTS

The cumulative effects of this alternative on ethnographic resources would primarily be the moderate to major, long term, regional adverse effects of disturbance to archeological resources through increased development, increased visitation to more places, and potential for increased vandalism due to more exposure and access to ethnographically significant archeological sites. Increased visitation to more resources could also have an adverse effect on tribal access to ethnographic resources for traditional cultural purposes. Some impacts would be improved by the development of long- term consulting relationships and agreements between the NPS and the tribes. Cumulative impacts would also be improved by updated interpretive stories that incorporate tribal versions of their own histories and connections to monument lands and resources.

CONCLUSION

The effects of this alternative would be both adverse and beneficial, depending on the degree of tribal involvement in park planning. The increased impacts to archeological sites as a result of building

new facilities and allowing increased visitation to numerous additional sites would also constitute a major impairment to ethnographic resources.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Overall, this alternative would have moderate to major, long-term beneficial effects on ethnographically significant archeological and natural resources from the effects of increasing visitor use and access, although any adverse effects that would result to archeological sites under this alternative would still constitute adverse effects to ethnographic resources. The preservation of untrailed expanses and unfragmented natural systems could have a moderate to major beneficial impact on ethnographic resources by protecting them from the effects of visitation. The development of updated interpretive programs and media and new in-depth learning experiences through partnerships with tribes and other entities would also have a moderate to major beneficial effect on ethnographic resources.

CUMULATIVE EFFECTS

By preserving untrailed expanses, unfragmented natural systems, and relatively pristine resource conditions throughout much of the park and improving interpretive media and learning experiences in partnership with associated tribes, the overall cumulative effects to ethnographic resources would be moderate to major, long term, and regionally beneficial. The only adverse effects to ethnographic resources that would result from this alternative are those that would adversely affect archeological resources.

CONCLUSION

Overall, the preferred alternative would have beneficial effects on ethnographic resources. Some adverse effects, associated with archeological resources, would remain. Further consultation with the tribes may reveal that the impacts to archeological resources from this alternative are moderate, rather than major, and therefore, the potential impacts identified may not constitute an impairment to ethnographic resources.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible/irretrievable commitments of resources.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

There would be no short-term gains resulting in long-term losses.

Unavoidable Adverse Impacts

Tribal representatives have identified all pre-Columbian archeological sites at Walnut Canyon as ethnographic resources that are important in tribal histories and cultural identities. Adverse impacts that presently occur to archeological sites as a result of visitor use would continue to constitute moderate to major adverse effects to ethnographic resources.

As described under impacts to archeological resources, an estimated 20% of the archeological resources in the monument would be adversely affected under Alternative 1. Any adverse effects to archeological sites would also constitute a moderate to major effect to the sites as ethnographic resources. Further, standard archeological mitigation measures that might recover some of the archeological values of the resources would not serve to mitigate adverse effects on cultural values.

Potential disturbance of archeological resources, especially involving potential disturbance to human remains, would constitute a major adverse effect to ethnographic resources and their associated cultural values.

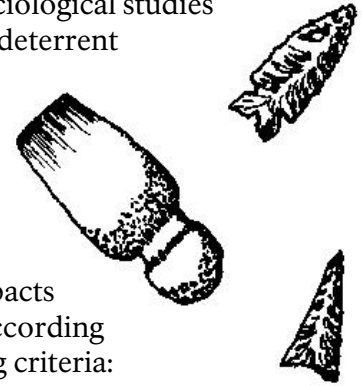
Alternative 2 is estimated to have a long-term, detrimental effect on 14- 20 archeological sites, which could constitute a long- term, major adverse effect on ethnographic resources. Further consultation with the tribes may reveal that the impacts to archeological resources from this alternative are moderate, rather than major, and therefore, the potential impacts identified may not constitute an impairment to ethnographic resources.

LONG-TERM INTEGRITY OF NATURAL SYSTEMS AND PROCESSES

Methodology

Available information on the natural systems of Walnut Canyon National Monument and surrounding ecosystem was reviewed, including information on geology, soils, ephemeral drainage systems, vegetation, and wildlife. Potential impacts to rare species/unique habitats, and wetlands/floodplains/riparian resources within the monument are assessed in separate sections below. Physiographic maps of the monument were used to generally characterize the natural systems surrounding proposed visitor use and support facilities, and the anticipated visitor uses and administrative activities within the various management zones. The potential impacts of each alternative on those systems were then evaluated, including pertinent issues identified during the scoping process. Predictions about short- and long- term impacts were based on past studies of land use and visitor impacts to the regional ecosystem, including some studies at the

monument. Sociological studies comparing the deterrent effects of signs versus ranger presence at sites were also considered. The predicted intensity of impacts is articulated according to the following criteria:



Negligible: An action that at most would affect only a very few individual plants or animals of abundant populations, and otherwise have no discernable effect on the existing natural systems or processes within Walnut Canyon National Monument.

Minor: An action that would affect a small proportion of individuals within abundant species populations, or alter habitat function or environmental quality within a very localized area of Walnut Canyon National Monument. The change would require intensive scientific effort to measure and have barely perceptible consequences to natural systems or processes.

Moderate: An action that would : (1) affect a measurable proportion of individuals within multiple species populations within the monument, (2) affect the existing dynamics between multiple species (e.g., predator- prey, herbivore- forage, vegetation structure- wildlife breeding habitat), (3) measurably alter the distribution of a given habitat or key habitat attributes within the monument, or (4) alter environmental quality over a small to medium proportional area of the monument. The change would be readily measurable using widely accepted scientific monitoring methods. A species population, plant and animal communities, habitats, or natural system function might deviate from normal levels under existing conditions, but

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all species would remain indefinitely viable within the monument.

Major: An action that would extensively alter species population numbers, the natural dynamics between multiple species, the distribution of multiple habitat types; or environmental quality across a large area of the natural environment within Walnut Canyon National Monument, with the potential to spread onto adjacent lands. The change would be readily apparent and require little scientific monitoring effort to detect or document. For adverse effects, a species population, plant and animal communities, habitats, or natural system function would be permanently altered from existing levels, and one or more species would be at risk of extirpation within the monument.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Under the No- Action Alternative, natural systems and processes within Walnut Canyon National Monument would be allowed to continue recovering from the adverse impacts of historic logging, and livestock grazing. Management zones would not be established to define appropriate areas for NPS facilities and visitor activities. Development of new facilities and visitor uses could occur under site- specific project planning and regulatory compliance processes, with unpredictable impacts to soils, ephemeral drainage systems, vegetation, and wildlife.

Daytime use of the paved entrance road by park visitors would continue. Most visitation occurs between the months of April and October, and between the hours of 10 a.m. and 6 p.m. Local residents occasionally use the road for other purposes year- round at any time of the day or night. Motor noise from passing vehicles frequently disturbs wildlife, and

occasionally animals are killed in collisions with motor vehicles. The entrance road generally conveys most storm water flows through the natural drainage system. At a few locations, storm water is impounded on the upslope side and "jetting" erosion occurs on the downslope side of culverts, causing very local erosion and vegetation changes. Under the No- Action Alternative, continued use of the entrance road would have negligible to long- term, minor adverse impacts to soils, ephemeral drainage systems, vegetation, and wildlife.

Approximately 180 acres, or 5%, of the total monument area is currently impacted by visitor use and NPS support infrastructure. Visitor use and NPS operations impacts to natural systems and processes are primarily concentrated around the visitor center, maintenance shop, and employee housing area near the north- central canyon rim. Routine maintenance activities, including vegetation management, are limited to the entrance road, parking lot, maintenance shop, employee housing area, and utility corridors. Two short trails provide visitor access into the canyon and along the rim within the north- central canyon area. Ranger- guided hikes also provide dispersed visitor access along the north rim area immediately west of the visitor center. Most visitor use impacts are expected to be localized to within 300 feet of the north canyon rim facilities and trails, and include trampling of vegetation, compaction of soils, development of social trails, minor alterations in drainage patterns, noise, and disturbance to wildlife. Local populations of nonnative plants also persist in heavy use areas and along road and trail corridors. Ongoing efforts to improve visitor orientation about appropriate behavior toward sensitive resources could mitigate some adverse visitor use impacts to natural systems and processes. Under the No- Action Alternative, long- term, minor adverse impacts from NPS operations and

visitor activities would continue around interpretive areas and support facilities within the north- central canyon rim area.

Approximately 2,070 acres, or 58%, of the area within the monument has long remained closed to the general public to protect sensitive cultural and natural resources. The monument has also remained closed and gated at night. This has minimized human disturbance to wildlife within the canyon bottom, south rim, and tributary canyons. Occasional unauthorized hiking and other isolated natural resource impacts would continue to occur within the closed area because the existing staffing level is too low to ensure frequent patrols. Under the No- Action Alternative, continuing the backcountry closure policy would ensure that the integrity of natural systems and processes within the pre- 1996 monument area is preserved.

The NPS would enforce resource protection regulations within the 1,330 acre 1996 boundary expansion area. The new boundary fence is appropriately designed to allow wildlife to cross at existing movement corridors, mitigating potential adverse impacts to wildlife. Since the boundary expansion areas were fenced, motor vehicle travel and livestock grazing have been excluded, with long- term, minor to moderate beneficial impacts to soils, vegetation, drainage system function, and wildlife. Unless the NPS effectively plans for appropriate visitor uses and facilities, the expansion areas could continue to receive public recreational uses similar to those under former management by the U.S. Forest Service. Predominant uses include hiking, bicycling, and horse riding. Target shooting and all- terrain vehicle riding are also popular activities around the eastern canyon area. These activities have caused localized vegetation trampling, soils compaction, erosion, noise, wildlife disturbance, and increase in non- native invasive plant populations. Some unplanned

trail segments are evident. Isolated incidents of off- road driving, firewood cutting, wildlife poaching, and trash dumping may also occur, which have greater adverse impacts to natural systems and processes. The impacts of NPS management of the boundary expansion areas without general management zoning for visitor use and resource preservation are unpredictable, but could result long- term, negligible to minor, adverse impacts over existing natural resource conditions, with the exception of wildlife, which could experience long- term, minor to moderate adverse impacts without careful planning..

Under the No- Action Alternative, local infestations of nonnative plants would likely persist in disturbed areas along road and trail corridors, developed areas, or areas of heavy visitation. The NPS would attempt to monitor and control nonnative species when warranted. Feasible control technologies are not readily available for small, annual invasive plants, and success in controlling them is generally predicated on early detection and control, or upon the availability of ecologically sound and affordable technology. The best measures to control these species are careful planning of access routes and ground- disturbing activities to minimize the potential for establishment and spread. The NPS would continue to follow established policy of prohibiting ground disturbing activities without prior assessment and mitigation of potential impacts from invasive plants. Despite these efforts, existing invasive, nonnative species would likely continue to have long- term, minor to moderate adverse impacts on soils, ephemeral drainage systems, vegetation, and wildlife habitats.

CUMULATIVE EFFECTS

The geographic area used for assessing cumulative effects is the Walnut Canyon watershed.

ENVIRONMENTAL CONSEQUENCES

Under the No- Action Alternative, the cumulative impacts of continuing public visitation and NPS operations at Walnut Canyon National Monument on natural systems and processes are difficult to estimate. The primary adverse cumulative impacts of NPS management would likely result from failure to manage increased visitation and road traffic, or from poorly planned facilities. Over time, these circumstances would be expected to increase adverse impacts to soils, ephemeral drainages, vegetation, and wildlife. Although carrying capacity for visitor use has not been established, a threshold could be reached where the adverse impacts to natural systems and processes, especially for wildlife, exceed those stated in the analysis above.

The proximity of Walnut Canyon National Monument to the city of Flagstaff likely contributes to the local "quality of life," which influences regional population growth. The recreational aspect of the monument may therefore slightly contribute to urban development and habitat fragmentation around Flagstaff, and associated regional impacts to air and water quality, geology, soils, vegetation, wildlife, and riparian resources. However, given the diversity of public lands and recreational opportunities within the region, public enjoyment of the monument is likely not among the prominent reasons for urban growth. In this regard, the No- Action Alternative would likely have negligible cumulative impacts upon regional natural systems and processes.

Conversely, the existence of the monument as a protected area where natural systems and processes are sustained may contribute significantly to the conservation of regional natural systems and biodiversity. As time passes, Walnut Canyon should have increasing scientific value as a relatively undisturbed ecosystem from which to assess regional land use impacts. In this regard, the

No- Action Alternative would have long-term, beneficial cumulative impacts to regional natural systems.

CONCLUSION

Current management of Walnut Canyon National Monument ensures natural systems and processes would be sustained with relatively few long- term adverse environmental impacts, except for those that are attributable to increasing visitation, historic land use, and regional watershed, airshed, and ecosystem degradation. Soils, ephemeral drainage systems, vegetation, and wildlife are generally stable, and inherent biodiversity is relatively intact. The NPS would manage for the continued recovery of natural systems from historic land uses. Non- native plant species have the potential to invade large areas of the monument if not managed, resulting in minor to moderate adverse impacts on natural systems and processes.

NPS operations and visitor activities are causing long- term, negligible to minor adverse impacts around interpretive areas and support facilities within the north-central canyon rim area. Continued use of the entrance road would have negligible to long- term, minor adverse impacts to natural systems, with a greater degree of adverse impact to wildlife. Most of the pre-1996 area within the monument is closed to the general public to protect sensitive resources, which ensures the long- term integrity of natural systems and processes. The exclusion of motor vehicles and livestock grazing within the 1996 boundary expansion area would have long- term, minor to moderate beneficial impacts to natural systems and processes. . New visitor facilities and visitor activities in the 1996 boundary expansion areas would not be master planned. Related impacts from unmanaged recreational use are unpredictable, but would likely be long-term, negligible to minor, adverse for soils,

vegetation, and drainage function, and long- term minor to moderate for wildlife.

The availability of the monument for public enjoyment might influence regional urban development around Flagstaff and cumulative impacts to regional natural systems, but these impacts are believed to be negligible and considerably offset by the value of the monument as a long- term conservation area.

Under the No- Action Alternative, approximately 5% of the total monument area would remain impacted by visitor use and NPS support infrastructure. The No- Action Alternative would result in no major impacts on natural systems and processes in Walnut Canyon National Monument.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Under Alternative 1, natural systems and processes within Walnut Canyon National Monument would be allowed to continue recovering from historic logging and livestock grazing. The impacts of continuing NPS operations and visitor activities around existing facilities in the north- central canyon area would be similar to those identified for the No- Action Alternative. Ongoing efforts to improve visitor orientation about appropriate behavior toward sensitive resources could mitigate

some adverse visitor use impacts to natural systems and processes.

Under Alternative 1, new facilities would be developed and visitor access would be expanded to new areas. The existing entrance road would be shortened by approximately 1/4 mile, and a new parking area would be built farther from the canyon rim; both the old portion of the entrance road and the parking area near the visitor center would be retained for handicapped parking and other administrative purposes. The park would remain closed and gated at night. Impacts to wildlife along the shortened access road and new parking/orientation area would be similar to the No- Action Alternative, because existing traffic levels would continue over most of the existing entrance road, the new facilities would be in close proximity to the road, and wildlife in the vicinity is already adapted to high levels of human activity and traffic disturbance. The reduced use of motor vehicles in close proximity to the canyon rim at the visitor center would reduce traffic noise currently projected into Walnut Canyon, with long term, minor beneficial effects on wildlife. Lengthening pedestrian access to the visitor center would have negligible to long- term minor adverse impacts along the pedestrian corridor, including localized vegetation trampling, soils compaction, unplanned trail development, drainage pattern interference, and nonnative plant establishment.

The installation of a new orientation facility near I- 40, new parking area, and new administrative offices would require the removal of several acres of vegetation and associated loss of wildlife habitat, soils disturbance, and local disruption of drainage patterns. The NPS would be required to manage native vegetation surrounding the larger developed area, including actions such as removing individual hazard trees, which would have negligible impacts to vegetation.

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Pending additional detailed implementation planning, roaded access would be developed along the northeastern canyon rim. Approximately 1/4 miles of existing primitive road would be improved through the adjacent Coconino National Forest, and another 2 miles would be constructed along the northeastern canyon rim. An undetermined area of pinyon- juniper woodland and rabbitbrush shrubland vegetation would be removed. Wildlife habitat would be permanently impacted along the route. Soils and ephemeral drainage patterns in the small tributary canyons along the northeast canyon rim could also be locally disrupted, depending upon the level of engineering design and final routing of the road. The proposed route would bisect a frequently used cross-canyon movement corridor for elk, and skirt habitat for a declining herd of pronghorn on the adjacent Coconino National Forest. Vehicle use along the new road would increase animal mortality from collisions. Motor vehicle noise would be projected along the entire northeastern rim, and into the eastern end of canyon. Many wildlife avoid roaded areas, and because the strip of land along the north canyon rim is so narrow, some species would likely no longer be able to utilize habitat in this area of the monument. The road would also provide a new dispersal corridor for nonnative plant species. For these reasons, the proposed scenic road would have long-term, minor adverse impacts to most aspects of natural systems, including soils, ephemeral drainage systems, and vegetation. Depending upon final routing and design considerations, and the frequency and timing of traffic, the road would have long-term, moderate adverse impacts to wildlife species, based upon their respective tolerance for high levels of daytime human activity and traffic. .

Under Alternative I, a variety of nonmotorized, visitor use areas would be

formalized within the proposed Extended Learning, Guided Adventure, and Natural Area Recreation Zones. Within the north-central canyon rim area, self-guided visitor activities would be expanded and ranger-guided hikes would be routinely conducted within areas long closed to visitor access. . Visitor activity within these management zones would greatly increase compared to existing conditions, resulting in unplanned trail segments to popular archaeological features and/or scenic viewpoints, and localized soil compaction, vegetation trampling, erosion, spread of nonnative plants, and noise disturbance to wildlife. Visitor use within the proposed Extended Learning Zone and Guided Adventure Zone along the north-central rim would have long-term, minor adverse impacts upon most aspects of natural systems and processes with long term, moderate adverse impacts to some wildlife species that utilize the narrow canyon below.

The proposed Natural Area Recreation Zone encompasses the northwest canyon rim area included in the 1996 boundary expansion. Popular recreational activities that occurred under former U.S. Forest Service management, including hiking, bicycling, and horseback riding, would continue. Under NPS management, these activities would not be expected to increase much over existing levels. Many localized impacts from recreational activities to soils, local drainage patterns, vegetation, and wildlife have already occurred. This use would likely have negligible to long-term, minor adverse impacts to natural systems within the northwest canyon rim area.

Guided hiking activity within a 1/2 mile reach of the east canyon area would provide frequent visitor access to the canyon floor. Although well-developed hiking trails are not proposed, the rugged terrain limits the number of access routes. Over time, fixed trail routes would likely be needed on the steep canyon slopes to mitigate

environmental damage from erosion and social trailing. Unless another route is improved, the old Santa Fe Dam access road would likely become the preferred hiking route along the canyon bottom. The east canyon area is a known movement corridor and seasonal foraging area for elk. The riparian corridor along the canyon floor provides habitat for a wide variety of wildlife. Visitor use within the east canyon area would have varying impacts to wildlife, depending on the timing and frequency of tours, group size, and access routes, and respective wildlife species tolerances to this activity. Visitor use in the Guided Adventure Zone would cause long-term, minor adverse impacts to soils, tributary canyon drainages, and vegetation. Impacts to wildlife could be partially mitigated if the area is closed during important breeding and/or migration seasons, and tour frequency and group size are limited, but some species might still be displaced from the east canyon area, a long-term, moderate adverse impact.

The remaining area within the monument area would be formally recognized as a Resource Preservation Zone, and unauthorized entry would be prohibited. There would be negligible environmental impacts within the areas long closed to access, but there would be long-term, minor to moderate beneficial impacts to natural systems and processes within the 1996 boundary expansion areas.

CUMULATIVE EFFECTS

Under Alternative 1, the total area within the monument impacted by NPS facilities and visitor use would increase from the current 180 acres (5% of the total area) to an estimated 700 acres (20% of the total area). The existing road system would almost double in length and visitor access in one form or another would be formalized along the entire north canyon rim and the east canyon floor. The combined effect of the

new road, trails, guided hiking, and dispersed recreation areas would magnify adverse impacts such as unplanned trail segments, soil compaction, vegetation trampling, localized erosion, and spread of nonnative plants. More significantly, the new road and visitor activities would result in sustained daytime human presence and vehicle noise along much of the north side of Walnut Canyon. The resulting noise would project into the narrow canyon, and cumulatively increase the level of disturbance to wildlife species. Some of the cumulative impact to nocturnal wildlife would be partially mitigated by the nighttime closure of the monument. For these reasons, Alternative 1 would have long-term, moderate adverse cumulative impacts to natural systems and processes within the monument.

The cumulative impacts of NPS management of Walnut Canyon on the surrounding region and of adjacent land use impacts on natural systems within the monument would be the same as those described for the No-Action Alternative.

CONCLUSION

Under Alternative 1, natural systems within Walnut Canyon National Monument would continue to recover from historic land use impacts. Continued NPS operations and visitor activities around the existing Visitor Center-Island Trail area would have similar impacts to those identified for the No-Action Alternative. The proposed new visitor activities within the Extended Learning, Guided Adventure, and Natural Area Recreation Zones would result in increased unplanned trail segments, soil compaction, vegetation trampling, localized erosion, spread of nonnative plants, and noise disturbance to wildlife. The area impacted by NPS facilities and frequent visitor use would increase from 5% to an estimated 20% of the total area within the monument. Sustained daytime human

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presence and traffic noise along most of the north canyon rim would have long- term, moderate adverse impacts to one or more wildlife species within the narrow canyon below. The combined impact of the new road system, trail corridors, and dispersed hiking across the entire north canyon rim would cumulatively increase these impacts to natural systems and processes within the monument.

Alternative 1 would result in no major impacts on natural systems and processes in Walnut Canyon National Monument. Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Under Alternative 2, natural systems and processes within Walnut Canyon National Monument would be allowed to continue recovering from historic logging and livestock grazing. The impacts of continuing NPS operations and visitor activities around the Visitor Center- Island Trail area would be similar to the No- Action Alternative. Ongoing efforts to improve visitor orientation about appropriate behavior toward sensitive resources could mitigate some adverse visitor use impacts to natural systems and processes.

The impacts from continued daytime use of the existing entrance road would be the similar to the No- Action Alternative. However, under Alternative 2 the entire

entrance road from I- 40 to the existing visitor center would be gated at night. This would eliminate most nighttime traffic along the road and associated noise disturbance and wildlife mortality, resulting in long- term, minor beneficial impacts to wildlife.

A new visitor center and parking area would be built near I- 40 at the park entrance, which would require the removal of several acres of mixed ponderosa- pinyon- juniper vegetation, associated loss of wildlife habitat, soils disturbance, and local disruption of drainage patterns. The surrounding area within 300 feet of the facility would likely be impacted by heavy visitor use, resulting in the establishment of unplanned trail segments, localized soil compaction, erosion, vegetation trampling, noise disturbance to wildlife, and spread of nonnative plants. The NPS would be required to manage native vegetation surrounding the larger developed area, including actions such as removing individual hazard trees. The development of new facilities at I- 40 would allow the NPS to manage visitor crowding and traffic congestion along the north- central canyon rim area in the future if resource impact thresholds become unacceptable. This would reduce long- term adverse impacts to natural systems from NPS operations and visitor access along the canyon rim.

A portion of the existing visitor center would be removed, and the disturbed area would be restored to natural vegetation and wildlife habitat. There would be short- term, minor adverse impacts to vegetation and soils around the visitor center during the remodeling and vegetation restoration effort.

Under Alternative 2, visitor access and activity along the north- central canyon rim would greatly increase within the proposed Extended Learning Zone. Ranger- guided hikes would be routinely conducted in the Ranger Ledge and Ranger Cabin areas. A

self-guided trail would be established along abandoned roads to the Ranger Cabin area, and environmental education activities would be organized within this management zone. This area has long been closed to general visitor access, and increased visitor activity would potentially result in unplanned trail segments to popular archaeological features and/or scenic viewpoints, and localized soil compaction, vegetation trampling, erosion, spread of nonnative plants, and noise disturbance to wildlife. Visitor activities within the proposed Extended Learning Zone would have long-term, minor adverse impacts on natural systems and processes.

Pending additional detailed implementation planning, approximately 1¼ miles of existing primitive road would be improved through the adjacent Coconino National Forest to the northeast canyon rim in the 1996 boundary expansion area. A staging area for ranger-guided hikes would be developed. Improving and maintaining the road and staging area would disturb soils, local drainage, vegetation, and wildlife habitat along the existing route. The road would skirt an area of the Coconino National Forest that is utilized by a declining herd of pronghorn. Under the visitor use limits described in the Key Actions, vehicle travel to the rim would be infrequent, with some disturbance to wildlife species that utilize the canyon. The proposed access road improvements and staging area, and motor vehicle travel would have long-term, minor adverse impacts to most aspects of natural systems, including soils, ephemeral drainage systems, and vegetation. Depending on the frequency and timing of use, this action would have long-term, minor adverse impacts to more abundant wildlife species, but could have long-term, moderate adverse impacts to less abundant species that are currently restricted to more remote areas of Walnut Canyon.

Guided hiking activity within the proposed Guided Adventure Zone would occur within the 1996 boundary expansion area in the east canyon. Guided hikes would be implemented along a 2½ mile reach of the east canyon rim and floor. Although well-developed hiking trails are not proposed, the rugged terrain limits the number of access routes. Over time, fixed trail routes would likely be needed on the steep canyon slopes to mitigate environmental damage from erosion and social trailing. Unless another route is improved, existing abandoned primitive roads would likely become the preferred hiking route along the canyon rim, and the old Santa Fe Dam access road would likely become the preferred route along the canyon bottom. The east canyon area is a known movement corridor and seasonal foraging area for elk. The riparian corridor along the canyon floor provides habitat for a wide variety of wildlife. Given the visitor use thresholds described in the Key Actions, guided hikes within the east canyon area would be infrequent and group size would be small and manageable. Visitor use in the eastern canyon area would cause long-term, minor adverse impacts to soils, vegetation, the ephemeral drainage along the canyon bottom, and abundant wildlife species. There could be long-term, moderate adverse impacts to less abundant wildlife species that are restricted to the narrow riparian area along the eastern canyon floor. These impacts might be reduced if guided hikes are carefully scheduled to avoid important breeding and/or migration seasons.

The remaining area within the monument (approximately 93%) would be formally recognized as a Resource Preservation Zone, and unauthorized access would be prohibited. This would have long-term, moderate beneficial impacts to natural systems and processes.

CUMULATIVE EFFECTS

Under Alternative 2, the total area within the monument impacted by NPS facilities and visitor use would increase from the current 180 acres (5% of the total area) to an estimated 230 acres (7% of the total area). Infrequent guided hikes in the eastern canyon area would influence natural systems and processes be influenced over an additional 640 acres (18% of the total area). Expanding visitor access and visitor activities into the proposed Extended Learning Zone along the north central canyon rim and the proposed Guided Adventure Zone in the eastern canyon would magnify adverse visitor use impacts, mostly for wildlife that utilize the riparian corridor along the narrow canyon bottom. The magnitude of cumulative effects would be less than under Alternative 1. The cumulative effects of NPS management on regional natural systems and adjacent land use impacts on natural systems within the monument would be the same as identified for the No- Action Alternative.

CONCLUSION

Under Alternative 2, natural systems and processes within Walnut Canyon National Monument would continue recovering from historic land use. The impacts of continuing daytime use of the existing entrance road, NPS operations, and visitor activities around the Visitor Center- Island Trail area would be similar to the No- Action Alternative. The entire entrance road would be gated at night, resulting in long- term, minor beneficial impacts to wildlife.

A new visitor center and parking area would be built near I- 40 at the park entrance, which would locally impact vegetation, wildlife habitat, soils, and drainage patterns. The new facilities would reduce visitor crowding and traffic congestion at the current Visitor Center, reducing long- term adverse impacts to natural systems along the north- central canyon rim. Visitor activity

would expand into the Ranger Cabin area west of the Visitor Center, which has long been closed to general visitor access. Increased visitation in this area would have long- term, minor adverse impacts on natural systems and processes.

Pending detailed implementation planning, 1¼ miles of existing primitive road would be improved to the northeast canyon rim, and a staging area would be developed for guided hiking access into the eastern canyon. This action would cause localized long term loss of vegetation and wildlife habitat, and localized disturbance to soils and drainage patterns. Use of the road would be infrequent, and would have long- term, minor adverse impacts to most aspects of natural systems, except for wildlife. Abundant wildlife could experience long term, minor adverse impacts, while less abundant wildlife that are currently restricted to more remote areas of Walnut Canyon could experience long- term, moderate adverse impacts.

Within the Guided Adventure Zone, infrequent guided hikes, with limited group size, would be led within a 2½ mile reach of the east canyon. This activity would cause long- term, minor adverse impacts to soils, vegetation, and the ephemeral drainage along the canyon bottom. Depending upon the timing of guided hikes, there could be long- term, moderate adverse impacts to some wildlife species that utilize the narrow riparian area along the eastern canyon floor.

The total area impacted by NPS facilities and visitor use would increase from a current 5% to 7% of the total area within the monument. The remaining area within the monument (approximately 93%) would be formally recognized as a Resource Preservation Zone, and unauthorized access would be prohibited. This would have long- term, moderate beneficial impacts to natural systems and processes. However, guided hikes in the eastern canyon area would

influence natural systems and processes over an additional 18% of the total monument area within the Resource Preservation Zone. Visitor access in the proposed Extended Learning Zone along the north central canyon rim together with the proposed Guided Adventure Zone in the eastern canyon area would magnify adverse impacts to wildlife that utilize the narrow canyon. The magnitude of cumulative effects would be less under Alternative 2. The cumulative effects of NPS management on regional natural systems and adjacent land use impacts on natural systems within the monument would be the same as identified for the No- Action Alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

Under the various management alternatives, the total area of natural systems and processes directly impacted by visitor access and NPS support facilities would range from 180 to 700 acres of the total 3,600 acres within Walnut Canyon National Monument. Under Alternatives 1 and 2, localized areas of soils, vegetation, and wildlife habitat would be impacted to develop new visitor access or NPS support facilities. However, these areas could potentially be restored to near natural conditions should the facilities be removed at some future time. Accommodating increased visitation levels would increase the amount of human disturbance to

wildlife populations, which together with cumulative impacts from surrounding land use and development, could permanently disrupt certain species population numbers within Walnut Canyon.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

Various long- term local disturbances to natural systems and processes would be incurred under the alternatives in order to expand visitor use infrastructure, visitor support facilities, and/or NPS administrative facilities. Under Alternative 1, the integrity of the Walnut Canyon ecosystem and key wildlife habitat would be degraded in order to provide visitors a scenic driving experience.

Unavoidable Adverse Impacts

Historic land use and occasional visitor use have occurred within the backcountry area of Walnut Canyon National Monument for more than a

century and have had unknown impacts to natural systems and processes. Under all the alternatives, the entrance road would interfere to varying degrees with the local movement of many animal species. Construction of new buildings parking areas, roads, and trails under Alternatives 1 and 2 would locally increase disturbance to soils, drainage patterns, vegetation, wildlife habitat, and potentially increase the area dominated by nonnative, invasive plant species. Visitor use within the proposed interpretive, education, and discovery zones would likely result in local unplanned trail segments between popular features and localized soil compaction, vegetation trampling,



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disruption of ephemeral drainage systems and erosion, spread of nonnative plants, and noise and disturbance to wildlife.

Alternative 1 would greatly expand road and visitor access across most of the north canyon rim area, which would have unavoidable adverse impacts to wildlife species that currently find natural quiet and remote habitat within Walnut Canyon.

Alternative 2 would also expand visitor access to the east canyon area, but given the low frequency and small group size, the NPS would potentially be able to mitigate most impacts to wildlife through seasonal restrictions.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Methodology

This section is intended to augment the impact analysis for natural systems and processes, by analyzing specific impacts of the proposed management alternatives upon federally listed threatened, endangered, and other sensitive species. The Arizona Heritage Data Management System (Arizona Game and Fish Department 2001) was consulted via the Internet to generate a list of threatened and endangered species, and "species of concern" for Coconino County, Arizona. This list was compared to the draft National Park Species database for Walnut Canyon National Monument, which was recently compiled as part of the NPS Natural Resource Inventory and Monitoring Program and is the most current documentation of the monument's flora and fauna. In addition, the results of a recent survey for special status plants at the monument were considered (Huisinga et al. 2000). The recent designation of critical habitat for the threatened Mexican spotted owl within the monument requires careful consideration of potential adverse impacts upon this area. The locations of proposed

visitor access, activities, and support facilities for the various alternatives were compared to known sensitive species distribution records and habitat types in order to assess potential impacts. The actual status and distribution for several of the identified species is not well known, and predictions about impacts were largely based on available research describing a given species biology, ecology, and recent monitoring data from the region surrounding Walnut Canyon. The results of past studies of visitor and land use impacts to regional ecosystems were also used where similar impacts would be anticipated. The predicted intensity of adverse impacts is articulated according to the following criteria:

Negligible: An action that would not affect any individuals of a sensitive species or affect any of their respective habitats within Walnut Canyon National Monument.

Minor: An action that would affect a few individuals of sensitive species or have very localized impacts upon their habitat within Walnut Canyon National Monument. The change would require considerable scientific effort to measure and have barely perceptible consequences to the species population or habitat function within the monument.

Moderate: An action that would cause measurable effects on: (1) human activity-related disturbance to a small to medium proportion of a the total sensitive species population within the monument, (2) the existing dynamics between a sensitive species and other species (e.g., reduced-prey base, increased herbivory on rare plants, or increased competition with other species for prey or browse, or (3) a relatively large area or important attributes of a given sensitive species habitat within the monument. A sensitive species population might deviate from recent levels or the total area of suitable habitat might change from

existing conditions, but the species would remain viable within the monument.

Major: An action that would have drastic and permanent consequences for a sensitive species population or almost all available designated critical habitat or other sensitive species habitat within Walnut Canyon National Monument. For adverse impacts, a sensitive species population or its habitat would be permanently reduced from recent levels under existing conditions, and the species would be at risk of extirpation from the monument.

Effects Of No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Currently, no federally listed threatened or endangered plant species are known to occur in Walnut Canyon National Monument. *Rumex orthonuerus*, a threatened plant species, could potentially occur in wetland habitat within the monument. However, it has not been discovered during numerous botanical inventories and likely does not occur because of the relative scarcity of deep soil terraces adjacent to perennial waters. Another three "species of concern" are documented or potentially occur in habitats within Walnut Canyon, including riparian habitats. *Aquilegia desertorum* occurs within the monument along the Walnut Canyon floor and canyon slopes. *Erigeron saxatalis* also occurs at the bottom of Walnut Canyon. *Cimicifuga arizonica* potentially occurs within heavily shaded areas in Walnut Canyon, including riparian habitat, but has not been discovered during numerous botanical inventories of the monument.

Two additional plant species of concern could potentially occur in upland habitats within the monument. *Clematis hirutissima* var. *arizonica* is documented within the Walnut Canyon watershed upstream from

the monument. This subspecies prefers gentle, north- northeast trending slopes with well- developed limestone soils. *Clematis hirutissima* var. *arizonica* has yet to be discovered during botanical surveys of the monument, but likely occurs because of the presence of good habitat. *Hedeoma diffusum* grows along limestone terraces and gravels in Walnut Canyon upstream from the monument. This species has yet to be discovered during botanical surveys, but likely occurs because of the presence of good habitat.

Current NPS operations and visitor activities would remain concentrated in a relatively small area of upland habitats in proximity to the north- central canyon rim. No plant species of concern are known to occur within existing developed or visitor use areas, but *Hedeoma diffusum* occurs in nearby canyon rim habitat. Visitor use could cause trampling impacts to individual plants if an undiscovered population exists in this area. No new visitor access or NPS facilities are currently proposed within the preferred habitats of the other sensitive plant species.

Two threatened animal species and a number of animal "species of concern" occur within the monument. Bald eagles, listed as threatened under the Endangered Species Act, nest along perennial streams and large lakes in the Mogollon Highlands area. A wintering population also migrates into the region between October and May. There is no suitable nesting habitat within or nearby Walnut Canyon National Monument. Although overwintering bald eagles are not known to regularly roost in within the monument, individual birds are occasionally observed perching in dead tree snags and feeding on elk carrion. If bald eagles establish a roost area within the backcountry area, the NPS would establish a work activity closure around the roost site and protect important roosting trees and snags from being removed. The NPS would continue to consult with the U.S. Fish and

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Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect the bald eagle. Continuing NPS operations and visitor activities within the monument would likely have negligible impacts on this species.

The Mexican spotted owl, listed as threatened by the U.S. Fish and Wildlife Service, nests within the monument in densely forested, steeply sloping canyon terrain. Based upon monitoring during the 1990's, four breeding territories have been designated. In 2004, the U.S. Fish and Wildlife Service recently designated the entire monument as critical habitat for the species. Existing NPS operations and visitor activities on the north- central canyon rim over the last 60 years have likely impacted canyon habitat within an estimated ¼ mile from the Visitor Center- Island Trail area. The NPS would continue to monitor the owl, protect known nesting territories, and preserve specific habitat attributes in accordance with the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) and the Critical Habitat Designation Rule (U.S. Fish and Wildlife Service 2004). The NPS would consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect the Mexican spotted owl. The continuation of existing NPS operations and visitor activities within the north- central canyon rim area would likely have negligible impacts on this species.

Two additional sensitive raptor species are known to occur within the monument. The peregrine falcon nests on the massive cliff faces of Walnut Canyon. Some recreational activity occurs in proximity to the nest cliffs, but peregrines have nested during at least 10 of the last 16 years. Although the species was recently removed from the endangered species list by the U.S. Fish and Wildlife Service, the NPS would continue to monitor

breeding activity. The northern goshawk, a species of concern, also nests within densely forested terrain within the monument. Goshawks have established three breeding territories within the monument and adjacent Coconino National Forest. The territories have been monitored in most years since 1995. Breeding pairs or individual adults have been detected in at least two of the three territories in most years, and pairs have nested fairly regularly over the period of record. Most of the preferred habitat for peregrine falcon and northern goshawk is within the backcountry closure area, and existing NPS operations and visitor activities likely have negligible impacts.

Twelve species of bats that occur within Coconino County are considered species of concern. The fractured cliff faces of Walnut Canyon and trees with large cavities along the rim provide ample bat habitat. Sensitive species, such as Townsend's big-eared bat, potentially occur within the monument. The NPS currently has little information on the bat fauna, and would attempt to inventory the species occurring within the monument. Although little is known about the bat fauna in the canyon, these species are predominantly nocturnal, and impacts from existing daytime visitor use around the archaeological interpretive areas are likely negligible.

Walnut Canyon provides ideal den sites for mountain lions. Although not formally designated as a sensitive species, concern was identified during the scoping process because mountain lions are large predators with expansive home ranges that transcend the monument boundary. The NPS would follow established agency policy to sustain the ecological role of natural predators while minimizing threats to public safety. Because individual mountain lions range far outside the monument, conserving them and their habitat requires cooperation with the U.S. Forest Service, Arizona Game &

Fish Department, other local agencies, and the public.

Threatened and sensitive species within the monument have likely been impacted by historic logging, timber management, fire suppression, livestock grazing, and upstream water impoundments within the Walnut Canyon watershed. Under the No-Action Alternative, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Habitat conditions for threatened and sensitive plants and animals would likely improve within the 1996 boundary expansion area since motor vehicle use and livestock grazing have recently been eliminated. The NPS would continue to periodically assess the distribution and status of sensitive species, and attempt to control nonnative plant infestations when feasible.

Under the No-Action Alternative, approximately 95% of the area within the monument would remain closed to general public access to protect sensitive cultural and natural resources. This effectively precludes most direct disturbance to habitat within the canyon bottom, densely forested, steeply sloping canyon terrain, and cliff faces. Occasional dispersed human activities would continue within the closed area during cultural site preservation projects, guided hikes, resource monitoring studies, scientific research, educational activities, other special uses, and unauthorized hiking. Site-specific surveys would be required prior to any ground/vegetation disturbance, change in access corridors, or change in ambient noise levels to ensure sensitive species are not impacted. Sensitive plant and animal species would be effectively protected from disturbance, and unique habitat attributes would be preserved within Walnut Canyon National Monument. For the reasons discussed above, the No-Action Alternative would likely have no adverse

impacts on threatened, endangered, or sensitive species.

CUMULATIVE EFFECTS

The cumulative impacts of continuing public visitation to and NPS administration of Walnut Canyon National Monument on threatened, endangered, and sensitive species are difficult to estimate. Many of these species are experiencing long-term declines as a result of regional development and land uses over which the NPS has very little control. Others are sensitive because they have very localized habitats or very specific habitat attributes which could be heavily impacted by relatively minor management actions. At Walnut Canyon, the NPS cooperates when a regional species management framework is needed to sustain a widespread species. The narrowly distributed species are well protected within Walnut Canyon as the NPS and U.S. Forest Service consult with the U.S. Fish and Wildlife Service during respective agency planning processes to protect these species and their habitats. Adverse cumulative impacts from NPS management would likely only result from increased visitation and road traffic, especially for sensitive wildlife species.

The greatest cumulative impacts to sensitive species within Walnut Canyon are undoubtedly attributed to the impoundment of Walnut Creek upstream from the monument at Upper and Lower Lake Mary. The lakes have prevented seasonal stream flows through Walnut Canyon since 1941. As a result, *Cimicifuga arizonica* and *Erigeron saxatilis* may be experiencing long-term decline along with other riparian-dependent species in the canyon drainage system. The impoundments have also changed the seasonal reliability of surface water for wildlife species, and may have caused subtle changes in the riparian prey base and predator-prey interactions. However,

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sensitive wildlife species persist and are believed to have adapted to these changes. Long-term monitoring data would be required to reliably assess these impacts.

As Flagstaff continues to grow, outdoor recreational activity is anticipated to increase upon lands in close proximity to the northwestern monument boundary, along with the potential for increased unauthorized access into sensitive species habitat, introduction and spread of invasive plants, increased predation by feral cats and dogs, degradation of water quality in riparian areas, and increased human-mountain lion interactions. These actions could all have adverse cumulative impacts upon threatened, endangered, and sensitive species within and nearby the monument.

CONCLUSION

There are six threatened/sensitive plant species and as many as 17 threatened/sensitive animal species that are either known or could potentially occur within the monument. Vegetation and wildlife habitat would continue to recover from historic land uses. Monitoring programs are needed to routinely assess the distribution and status of sensitive species, and to ensure they are not impacted by visitor use and NPS operations.

Approximately 95% of the area within the monument remains closed to general public access. The backcountry closure effectively protects most sensitive plant and animal species habitat, including protected habitat for the Mexican spotted owl. Current NPS operations and visitor activities would remain concentrated in a relatively small area around the north-central canyon rim. No plant species of concern are known to occur within existing developed or visitor use areas, but *Hedeoma diffusum* occurs in nearby canyon rim habitat and experiences the greatest risk of impacts from current visitor use. Sensitive wildlife species appear to have adapted well to existing NPS

operations, visitor uses, ambient noise levels, and historic changes within the Walnut Canyon watershed caused by upstream impoundments. Sensitive plant species that are restricted to riparian habitats, including *Cimicifuga arizonica* and *Erigeron saxatilis*, may be experiencing long-term declines as a result of the creation of Upper and Lower Lake Mary, but long-term monitoring data would be needed to reliably assess trends. Other cumulative effects could result from exceeding visitor carrying capacity within the monument, and from nearby development within the town of Flagstaff.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Under Alternative 1, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Existing facilities, NPS operations, and visitor activities in proximity to the north-central canyon area would have negligible impacts to threatened, endangered, or sensitive species. The proposed shortening of the existing access road, new parking area, and new orientation facility near I-40 would not occur near known sensitive species locations or preferred habitats, and would likely have negligible impacts to threatened, endangered, or sensitive species. The NPS

would consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect the Mexican spotted owl or bald eagle. The NPS would continue to monitor the owl, protect known nesting territories, and preserve specific habitat attributes in accordance with the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) and Critical Habitat Designation rule (U.S. Fish and Wildlife Service 2004).

The proposed scenic drive along the northeastern canyon rim could potentially impact undiscovered populations of *Hedeoma diffusum*. Site-specific surveys would be required prior to any ground/vegetation disturbance to ensure sensitive plant species are avoided. The proposed road route is close enough to the canyon rim that daytime ambient noise from traffic could increase within known Mexican spotted owl nesting areas. It is also possible that owls hunt for prey within the eastern canyon area. Although owls might only enter the area at night, daytime traffic could adversely impact important habitat attributes such as the availability of prey. Reliable inventory of the east canyon area would be required to determine whether Mexican spotted owls utilize this area of Walnut Canyon. As a result of increased noise disturbance, this action would likely have long term, minor adverse impacts to Mexican spotted owls, but could have long term moderate impacts if owls regularly utilize the east canyon area. There are no records of bald eagles using the east canyon, but some clusters of large dead ponderosa trees occur in the western section of the proposed road. The canyon area east of the Santa Fe Dam does not provide mature forest habitat for northern goshawk. This reach of the canyon is broader and shallower, and does not have suitable bluffs for peregrine falcon nesting. There would

likely be negligible impacts to bald eagles, peregrines and goshawks from development of a scenic drive in the east canyon. The scenic drive could deter mountain lions from continuing to utilize habitat in the east canyon area, because both mountain lions and their prey avoid roaded areas. This action would have a long term, minor adverse impact to this species. Continued nighttime closure of the monument would partially mitigate some impacts from the proposed road. Potential mitigating measures to be considered during detailed implementation planning include strategically routing the road farther from the canyon rim, reduced speed limits, transporting visitors via quiet shuttle buses, and/or temporary closure of the area during sensitive species breeding seasons.

Under Alternative 1, a variety of nonmotorized, visitor use areas would be formalized within the proposed Extended Learning, Guided Adventure, and Natural Area Recreation Zones. Increased visitor activity along the proposed trails and ranger-guided hikes along the north canyon rim area could potentially impact *Hedeoma diffusum* or *Clematis hirutissima* var. *arizonica*. The area would be fully surveyed and any discovered populations would be avoided. Within the 1996 western boundary expansion area, hiking, bicycling, and horse riding activities would continue above the northwest canyon rim at levels similar to prior U.S. Forest Service management of these lands. Sensitive plant populations, including *Hedeoma diffusum* or *Clematis hirutissima* var. *arizonica*, might suffer minor adverse impacts from occasional trampling. Because visitor activity would be expanded west of the existing Visitor Center into an area that has long been closed to general visitor use, increased human activity and noise may disturb Mexican spotted owl, bald eagle, peregrine falcon, northern goshawk, and mountain lion. Depending upon the proximity of the

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activity area to the main canyon rim and the tributary Ranger Canyon, there could be long term, negligible to minor adverse impacts to all of these species. .

Guided hiking activity would be established within a limited area of the canyon floor near the eastern monument boundary. Although well- developed hiking trails are not proposed, the rugged terrain limits the number of access routes. Over time, fixed trail routes would likely be needed on the steep canyon slopes to mitigate environmental damage from erosion and social trailing. Unless another route is improved, the old Santa Fe Dam access road would likely become the preferred hiking route along the canyon bottom. The east canyon area is considerably more arid than the main canyon, and *Hedeoma diffusum*, *Clematis hirutissima* var. *arizonica*, *Aquilegia desertorum*, *Erigeron saxatilis*, and *Cimicifugia arizonica* probably do not occur there. Potential visitor activity areas would be surveyed for these species prior to detailed implementation planning, and populations would be avoided. Negligible impacts to these species would result from this action. The proposed guided hiking area is more than 1 mile away from the nearest Mexican spotted owl nesting habitat. Visitor activity would be limited to daytime guided hikes with manageable groups, which would likely have negligible impacts to Mexican spotted owls and their habitat. The canyon area east of the Santa Fe Dam is dominated by pinyon and juniper, and does not provide good winter roost trees for bald eagles or mature forest habitat for northern goshawk. This reach of the canyon is broader and shallower, and does not have suitable bluffs for peregrine falcon nesting. There would likely be negligible impacts to bald eagles, peregrines and goshawks. The east canyon area is a known habitat area for mountain lion. Mountain lions typically avoid groups of humans, and this action could affect habitat use within

the eastern canyon. Depending upon the frequency, timing, and size of groups, this would likely result in negligible to long term, minor adverse impacts to this species. Some adverse impacts to sensitive wildlife species would be partially mitigated by continued closure of the monument at night. Other potential mitigating measures to consider during detailed implementation planning include: monitoring for potential visitor use disturbance impacts, establishing seasonal closures, and/or locating activities in less sensitive habitat.

The remaining area within the monument would be formally recognized as a Resource Preservation Zone, and unauthorized access would be prohibited. This effectively precludes most disturbance to protected habitat for the Mexican spotted owl, riparian habitat within the canyon bottom, densely forested canyon terrain, and remote cliff faces. Occasional dispersed activity would continue within the closed area during cultural site preservation projects, resource monitoring studies, scientific research, educational activities, other special uses, and unauthorized hiking.

CUMULATIVE EFFECTS

Under Alternative 1, the total area within the monument impacted by NPS facilities and visitor use would increase from the current 180 acres (5% of the total area) to an estimated 700 acres (20% of the total area). The existing road system would almost double in length, and visitor access in one form or another would be formalized along the entire north canyon rim and the east canyon floor. The new road, trails, and dispersed hiking areas would result in sustained daytime human presence and vehicle noise along most of the north side of Walnut Canyon. The cumulative effect of the various Key Actions would magnify disturbance to threatened wildlife species and other sensitive wildlife species within the narrow canyon, resulting in long term,

minor to moderate adverse impacts to sensitive wildlife. In addition, mountain lions might become more habituated to humans, increasing the risk of encounters and the chance that agencies would have to manage for problem lions, with minor adverse impacts to the regional lion population. Some of the cumulative impact to sensitive wildlife would be partially mitigated by the continued nighttime closure of the monument. Additional mitigating measures could be developed during detailed implementation planning.

Other cumulative effects resulting from NPS management of Walnut Canyon on the surrounding region and from adjacent land uses on natural systems within the monument would be the same as those identified for the No- Action Alternative.

CONCLUSION

Under Alternative 1, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. The NPS would consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect threatened or endangered species. The NPS would continue to monitor the Mexican spotted owl, protect known nesting territories, and preserve specific habitat attributes in accordance with the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) and Critical Habitat Designation rule (U.S. Fish and Wildlife Service 2004).

Proposed new facilities in proximity existing facilities in the north- central canyon area would likely have no adverse impacts to threatened, endangered, or sensitive species.

Threatened and sensitive species would be surveyed and monitored more intensively, and mitigating measures would be adopted during detailed implementation planning

for the various Key Actions to effectively protect them and their habitats within Walnut Canyon National Monument.

Approximately 80% of the area within the monument area would be formally recognized as a Resource Preservation Zone, and unauthorized access would be prohibited. This would effectively preclude most direct impacts to most sensitive species habitat, including riparian habitat within the canyon bottom, densely forested canyon slopes, and remote cliff faces. However, the cumulative effect of the proposed new road, trails, and dispersed hiking areas would result in sustained daytime human presence and increased ambient noise along most of the north canyon rim, which would magnify disturbance to sensitive wildlife species within the adjacent narrow canyon. This could result in moderate impacts to some sensitive wildlife species.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Under Alternative 2, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Continued use of the entrance road, existing NPS facilities, and visitor activities in proximity to the north- central canyon area would have negligible impacts to threatened, endangered, or sensitive

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species. The proposed new visitor center and parking area near I- 40 are not in proximity to known sensitive species locations or preferred habitats, and would likely have negligible impacts to threatened, endangered, or sensitive species. The proposed closure of the western 1996 boundary expansion area to former land-use and recreational activities would likely have beneficial effects on threatened/sensitive species and their habitats. The NPS would consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect the Mexican spotted owl and bald eagle. The NPS would continue to monitor the owl, protect known nesting territories, and preserve specific habitat attributes in accordance with the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) and Critical Habitat Designation Rule (U.S. Fish and Wildlife Service 2004).

Under Alternative 2, visitor activity would increase with new trails and ranger- guided hikes in the proposed Extended Learning Zone, which could potentially impact *Hedeoma diffusum* or *Clematis hirutissima* var. *arizonica* in the north- central canyon rim area. The area would be fully surveyed and any discovered populations would be avoided. A variety of visitor and educational activities would be established west of the existing Visitor Center in the Ranger Cabin area, which has long been closed to general public access. Depending upon the proximity of activities to the main canyon rim and tributary Ranger Canyon, human presence and ambient noise levels could increase within habitat for Mexican spotted owls, bald eagles, peregrine falcons, northern goshawks, and mountain lions. There would be very little other habitat modification, and this action would have long term, minor adverse impacts to all of these species.

Approximately 1/4 miles of existing primitive road would be improved to the north- central canyon rim to a staging area for guided hikes. The road would approach the canyon rim near suitable nesting habitat for the Mexican spotted owl. However, general vehicle access would be prohibited, and the frequency of use would be low based upon the projected visitation limits described in the Key Actions. There are no records of bald eagles using the east canyon area, but clusters of large dead ponderosa trees do occur in the western section of the proposed road. The canyon area east of the Santa Fe Dam does not provide mature forest habitat for northern goshawk. This reach of the canyon is broader and shallower, and does not have suitable bluffs for peregrine falcon nesting. The access road would pass through known mountain lion habitat. Traffic would be infrequent, with a low risk of wildlife mortality or alteration of mountain lion habitat utilization. Ambient daytime noise levels would not be expected to noticeably increase within the inner canyon. Continued nighttime closure of the monument would partially mitigate some impacts from the proposed road. Potential mitigating measures to be considered during detailed implementation planning include strategically locating the staging area and access road farther from the canyon rim, transporting visitor groups via shuttle vans, and/or temporary closure of the area during sensitive species breeding seasons. There would likely be negligible impacts to bald eagles, peregrines, goshawks, and mountain lions, and negligible to minor impacts to Mexican spotted owl from development of a limited use access road that dead ends at a single location on the northeast canyon rim.

Under Alternative 2, limited guided hikes would occur within the east canyon area. Although well- developed hiking trails are not proposed, the rugged terrain limits the number of access routes. Over time, fixed

trail routes may be needed on the steep canyon slopes to mitigate environmental damage from erosion and social trailing. Unless another route is improved, the old Santa Fe Dam access road would likely become the preferred hiking route along the canyon bottom. The east canyon area is considerably more arid than the main canyon, and *Hedeoma diffusum*, *Clematis hirutissima* var. *arizonica*, *Aquilegia desertorum*, *Erigeron saxatilis*, and *Cimicifuga arizonica* probably do not occur there. Potential visitor activity areas would be surveyed for these species prior to detailed implementation planning, and populations would be avoided. Negligible impacts to these species would result from this action. The proposed guided hiking area is outside the nearest Mexican spotted owl nesting habitat. Visitor activity would be limited to daytime guided hikes, with small groups, on about 10 weekends per year. Depending upon the timing of this activity, there would be negligible impacts to Mexican spotted owls and their habitat. The east canyon area is also known habitat for mountain lions. Mountain lions typically avoid groups of humans, and this action could affect habitat use within the eastern canyon. Because guided hikes would only occur during the day, and the total number per year would be limited, this activity would likely result in negligible impacts to this species. Some adverse impacts to sensitive wildlife species would be partially mitigated by continued closure of the monument at night. Other potential mitigating measures to consider during detailed implementation planning include: monitoring for potential visitor use disturbance impacts, establishing seasonal closures, and/or locating activities in less sensitive habitat.

Approximately 93% of the total area within the monument would be designated a Resource Preservation Zone, and unauthorized entry would be prohibited.

This effectively precludes most disturbance to protected habitat for the Mexican spotted owl, riparian habitat within the canyon bottom, densely forested canyon terrain, and cliff faces. Occasional dispersed hiking would continue within the closed area during cultural site preservation projects, resource monitoring studies, scientific research, educational activities, other special uses, and unauthorized hiking.

CUMULATIVE EFFECTS

Under Alternative 2, the total area within the monument impacted by NPS facilities and visitor use would increase from the current 180 acres (5% of the total area) to an estimated 235 acres (7% of the total area). In addition, implementation of limited guided visitor hikes in the east canyon would result in infrequent human presence and noise disturbance over approximately 600 acres. The new trails and visitor activities along the north canyon rim west of the Visitor Center, together with new guide hiking activities in the reach of the canyon east of the Santa Fe Dam would somewhat magnify disturbance to threatened and other sensitive wildlife species within the narrow canyon. The impact would be greater than the No Action Alternative, but much less than under Alternative 1. In addition, mountain lions might become more habituated to humans. This would increase the risk of encounters and the chance that agencies would have to manage for problem lions, with minor adverse impacts to the regional lion population. Some of the cumulative impact to sensitive wildlife would be partially mitigated by the continued nighttime closure of the monument. Additional mitigating measures could be developed during detailed implementation planning.

Other cumulative effects resulting from NPS management of Walnut Canyon on the surrounding region and from adjacent land uses on natural systems within the

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monument would be the same as those identified for the No- Action Alternative.

CONCLUSION

Under Alternative 2, habitat for sensitive plant and wildlife species would continue recovering from former land uses within the monument. Continued NPS operations and visitor activities in the north- central canyon area would have negligible impacts to threatened, endangered, or sensitive species. The NPS would consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act for any management action which may affect threatened or endangered species.

The proposed new visitor center and parking area near I- 40 are not in proximity to known sensitive species locations or preferred habitats, and would likely have negligible impacts to threatened, endangered, or sensitive species.

Outdoor human activity and associated ambient daytime noise levels would be expanded west of the Visitor Center into the Ranger Cabin area, with long term, minor adverse impacts to Mexican spotted owl, bald eagle, peregrine falcon, northern goshawk, and mountain lion.

Potential adverse impacts to sensitive wildlife species within the proposed Guided Adventure Zone in the eastern canyon area would be reduced by continued closure of the monument at night, restricting visitor entry unless accompanied by NPS staff, limiting the number of guided group hikes per year, restricting the number of visitors in each group, monitoring for potential visitor use disturbance impacts, establishing seasonal closures, and/or locating facilities and activities outside of sensitive habitats. The actual access route and staging location would be carefully considered during detailed implementation planning.

Sensitive plant species within the proposed Extended Learning Zone, northeast canyon

rim access road, and the Guided Adventure Zone in the east canyon area would be surveyed and avoided.

Approximately 93% of the area within the monument, including most of the 1996 boundary expansion areas, would be formally recognized as a Resource Preservation Zone, and unauthorized entry would be prohibited. This effectively would preclude most disturbance to critical habitat for the Mexican spotted owl: riparian habitat within the canyon bottom, densely forested canyon terrain, and remote cliff faces. Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible or irretrievable loss of threatened, endangered, or sensitive species, or their habitats.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

Under Alternatives 1 and 2, road improvements along the northeast canyon rim would provide more convenient access to the east canyon area. This would increase ambient traffic noise levels and potential disturbance of threatened and sensitive wildlife species within the narrow canyon.

Unavoidable Adverse Impacts

Historical land use and occasional visitor use have occurred within the backcountry

area for many years, and had unknown impacts to sensitive species and their respective habitats. Under all of the alternatives, continuing visitor activity and NPS operations within the north-central canyon area would disturb sensitive animal species. The trend of increasing visitor numbers and associated vehicle traffic to the north-central canyon rim could also eventually have adverse impacts to sensitive wildlife species.

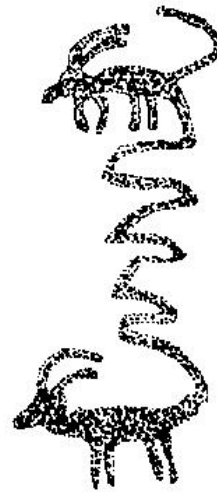
Under Alternatives 1 and 2, proposed road improvements, new trails, and new facilities would potentially increase the risk of establishment and dispersal of nonnative, invasive plant species. Expanding visitor access corridors and use areas along the north canyon rim and into the east canyon floor could increase human presence and noise disturbance to sensitive wildlife species within the narrow canyon. Under Alternative 1, increased visitor use within the proposed Natural Area Recreation Zone could result in increased trampling of sensitive plant species and increased noise disturbance to sensitive wildlife species.

LONG-TERM INTEGRITY OF WETLANDS, FLOODPLAINS, AND RIPARIAN HABITAT

Methodology

Available information on riparian resources for Walnut Canyon National Monument was reviewed. This included information on the riparian corridor along the floor of Walnut Canyon, and perennial seeps on the canyon floor and in tributary side canyons, primarily from the investigations of Brian (1985) and Phillips (1990). Very little information is available on the hydrology and water quality for the reach of Walnut Creek, ephemeral drainages, or seeps within the monument. The potential impacts of each alternative on wetlands, floodplains, and riparian areas were evaluated by

comparing their locations to proposed visitor and support facilities, and to the anticipated visitor uses and administrative activities within the various management zones. Predictions about short- and long-term impacts were based on past studies of land use and visitor impacts to similar watersheds within the regional ecosystem. The predicted intensity of adverse impacts is articulated according to the following criteria:



Negligible: An action that would cause no change in an existing wetland area or function, the ability of a floodplain to convey floodwaters, or to riparian vegetation and wildlife communities.

Minor: An action that would cause no change in wetland or floodplain area and function. The action would affect a few individuals of plant or wildlife species within an existing wetland or riparian area

within the monument. The change would require considerable scientific effort to measure and have barely perceptible consequences to wetland or riparian habitat function.

Moderate: An action that would change an existing wetland area or floodplain function, but the impact could be mitigated by the creation of artificial wetlands or modification of proposed facilities in floodplains. The action would have a measurable effect on plant or wildlife species within an existing wetland or riparian area, but all species would remain indefinitely viable within the monument.

Major: An action that would have drastic and permanent consequences for an existing wetland area or floodplain function which could not be mitigated. Wetland and riparian species dynamics would be upset,

and species would be at risk of extirpation from the monument.

Effects of No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Wetland, floodplain, and riparian resources within Walnut Canyon National Monument are restricted to the narrow canyon bottom and localized perennial seeps found in the tributary canyons on the south side of the monument. There are no existing NPS facilities or visitor uses within wetlands, floodplains, or riparian areas, and these resources are entirely within the backcountry closure area of the monument. The existing entrance road and most facilities drain away from the canyon rim, and are not affecting storm runoff stages or contributing pollutants to the Walnut Canyon watershed. Occasional hiking would continue within the riparian corridor on the canyon floor for cultural site stabilization projects, monitoring studies, scientific research, educational activities, and other special uses. In addition, occasional unauthorized hiking would likely continue along the canyon bottom. Under the No- Action Alternative, continued NPS operations and visitor uses would have negligible impacts to wetland, floodplain, and riparian resources within the monument.

The 1996 boundary expansion included an additional 4- mile upstream reach and 4- mile downstream reach of the meandering Walnut "Creek" drainage within the monument. Under the No- Action Alternative, both the upper and lower reaches of the canyon floor, including the wetland, floodplain, and riparian resources they encompass, would be surveyed, fenced, and closed to general visitor access. The upper 4 miles of riparian resources within the monument receive occasional hiking impacts, and the downstream 4 miles are

being impacted from livestock grazing under U.S. Forest Service grazing leases. Excluding recreational impacts would likely have negligible impacts to wetlands, floodplains, and riparian resources within the monument. Excluding livestock grazing from the canyon floor would likely have long- term, minor to moderate beneficial impacts to wetlands, floodplains, and riparian resources within the monument.

The Santa Fe Dam, a small impoundment near the downstream end of the canyon, would continue to exist on privately owned land within the monument. The dam is more than 100 years old and is a significant historical site. The NPS is seeking to acquire this land and would become owner of the dam and reservoir. Under the No- Action Alternative, the NPS would probably not remove the dam unless it is determined to be a public safety threat or to be causing serious resource impacts. Although the reservoir has locally impacted wetlands, floodplains, and riparian resources since it was constructed, it is almost entirely filled with sediment, and most local storm flows pass through the dam's spillway. The local reach of the historically impacted stream channel and sediment plain behind the dam would continue to be dominated by both native and nonnative weedy annual species, such as Russian thistle (*Salsola iberica*), cheatgrass (*Bromus tectorum*), horehound (*Marrubium vulgare*), sweet clover (*Melilotus albus*), and field bindweed (*Convolvulus arvensis*). The canyon floor area around the reservoir would continue to be seasonally used by wildlife for browse. A shallow area of water would continue to accumulate during periods of storm runoff, which would also continue to be used by wildlife. Under the No- Action Alternative, the continued existence of the historic reservoir would have negligible impacts to wetland, floodplain, and riparian resources within Walnut Canyon National Monument.

CUMULATIVE EFFECTS

The geographic area used in the consideration of cumulative impacts is the Walnut Canyon watershed.

Under the No- Action Alternative, the historic Santa Fe dam would likely have negligible cumulative impacts to wetland, floodplain, and riparian resources within the Walnut Canyon watershed. The reservoir area behind the dam is mostly filled with sediment, and storm flows pass through the dam's spillway to maintain downstream riparian resources. The ephemeral channel immediately below the dam has been impacted by the local disruption in streamflow, but appears to have long stabilized over the century since the dam was constructed.

The greatest cumulative impacts to wetland, floodplain, and riparian resources within Walnut Canyon are attributable to the impoundment of Walnut Creek upstream from the monument at Upper and Lower Lake Mary. The lakes have prevented seasonal stream flows through Walnut Canyon since 1941. As a result, wetland and riparian resources in the canyon drainage system are believed to be experiencing a long- term decline. The processes of stream channel scouring, sediment transport, terrace formation, and local spring and seep recharge have been altered in response to the cessation of seasonal flows. Riparian vegetation cover and composition would continue to change, and a few obligate wetland and riparian plant species might become extirpated from the watershed.

The impoundments have also altered flood stages and flood risk areas. Since 1941, the canyon has flooded three times from extreme storm events that completely filled both lakes. Smaller magnitude flows or flash floods also occur approximately once a decade from tributary watersheds below the lakes. A failure of either Upper or Lower Lake Mary Dams would result in

catastrophic damage to riparian resources within the monument. The lowest reach of the Island Trail could be within this flood stage, and the NPS would post warnings and consider closure of the trail should warnings of a possible dam failure be issued. The restoration of wetland, floodplain, and riparian resources would be predicated upon cooperation by the city of Flagstaff to provide regular seasonal water releases from Upper and Lower Lake Mary. Under the No- Action Alternative, continued disruption of flows within the watershed would have long- term, moderate adverse cumulative impacts to wetland, floodplain, and riparian resources within the monument.

Riparian resources within the Walnut Canyon watershed would remain buffered from water quality degradation by surrounding undeveloped Coconino National Forest and Arizona State trust lands. However, much of the land within the watershed lies within the Flagstaff city limits, and could potentially be acquired for development. The development of streets, residential, and commercial districts within the relatively pristine canyon watershed would increase non- point source pollution, such as wind- blown litter, motor and exhaust residue from streets, and fertilizers, herbicides, and pet waste from lawns. This would have long- term, minor to moderate adverse cumulative impacts to riparian and wetland resources within Walnut Canyon National Monument.

CONCLUSION

Under the No- Action Alternative, continued NPS operations and visitor uses would have negligible impacts to wetland, floodplain, and riparian resources within the Walnut Canyon watershed. Fencing the 1996 boundary expansion areas along the canyon floor and closing the area to the general public would likely have negligible impacts, and excluding livestock grazing

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from the eastern boundary expansion area would likely have long- term, minor to moderate beneficial impacts. The historic Santa Fe dam would likely have negligible impacts because most storm flows pass through the dam's spillway.

The greatest impacts to wetland, floodplain, and riparian resources are attributable to cumulative impacts from upstream impoundments of Walnut Creek at Upper and Lower Lake Mary. Stream geomorphic processes, localized wetlands, and riparian vegetation would continue to experience a long- term decline in response to the cessation of seasonal flows. A few obligate wetland and riparian plant species might become extirpated from the monument. The impoundments have also altered flood stages and floodplain areas, and a dam failure would cause catastrophic damage to riparian resources within the monument. Continued disruption of flows within the watershed would have long- term, moderate adverse cumulative impacts to wetland, floodplain, and riparian resources within the monument.

Riparian resources within the Walnut Canyon watershed would remain buffered from water quality degradation by surrounding undeveloped forest lands. The FLEA plan states that the management emphasis for the Lake Mary Watershed Management Area is on maintenance and improvement of the watershed function. It is possible that some lands within the boundaries of incorporated communities or land within locally approved growth management boundaries could eventually be acquired for development by the city of Flagstaff. This would increase non- point source pollution, and have long- term, minor to moderate adverse cumulative impacts to riparian and wetland resources within Walnut Canyon National Monument.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Under Alternative 1, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No- Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those described for the No- Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No- Action Alternative. The proposed new facilities along the existing access road would also be entirely within an upland environment and would have negligible impacts to wetlands, floodplains, and riparian resources.

Approximately 2 miles of road would be built to provide a new scenic drive along the northeast canyon rim. The proposed road route is entirely within an upland environment, but would cross as many as five large tributary channels that drain from the northeast canyon rim into Walnut Canyon. The road would be properly designed to minimize interference with storm flows into the canyon. However, frequent vehicle use along the new road could potentially introduce trace amounts of non- point source pollution from motor and exhaust residue into the Walnut Canyon watershed. The proposed road

along the northeast rim would likely have negligible to long-term, minor adverse impacts on riparian resources within the monument.

Under Alternative 1, dispersed guided hiking would be established in approximately 1/2 mile of riparian corridor along the east canyon floor. The terrain is rugged and the old Santa Fe Dam access road along the bottom of the canyon would likely be the preferred hiking route. Dispersed hiking along the narrow riparian area could result in occasional trampling of ephemeral channels, stream terraces, and riparian vegetation. Hiking would be prohibited in wetland areas. Depending upon the level of disturbance, stream banks and terraces could erode more easily during infrequent flash floods. The proposed visitor access to riparian resources would likely result in negligible to long-term, minor adverse impacts to riparian resources and floodplains within the monument.

CUMULATIVE EFFECTS

The cumulative impacts of Alternative 1 on wetlands, floodplains, and riparian resources would be the same as those described for the No-Action Alternative.

CONCLUSION

Under Alternative 1, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No-Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those described for the No-Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No-Action Alternative. The proposed new facilities along the existing entrance road would be entirely within an upland environment and also would have negligible impacts to wetlands, floodplains, and riparian resources.

Approximately 2 miles of road would be built along the northeast canyon rim and would cross tributary drainages of Walnut Canyon. Frequent vehicle use along the new road could potentially introduce trace amounts of non-point source pollution from motor and exhaust residue into the Walnut Canyon watershed. The proposed road would likely have negligible to long-term, minor adverse impacts on riparian resources. Dispersed guided hiking would occur in 1/2 mile of riparian corridor along the east canyon floor, increasing disturbance to stream banks, terraces, and riparian vegetation. This impact would probably be offset by fencing the 1996 boundary to exclude livestock grazing. Visitor use within this area would likely result in negligible to long-term, minor adverse impacts.

The cumulative impacts of Alternative 1 on wetlands, floodplains, and riparian resources would be the same as those identified for the No-Action Alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Under Alternative 2, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No-Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those

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described for the No- Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No- Action Alternative. The proposed new visitor center along the existing access road would be entirely within an upland environment and also would have negligible impacts to wetlands, floodplains, and riparian resources.

An existing primitive road through the adjacent Coconino National Forest would be upgraded to provide visitor access to the northeast canyon rim. The route is entirely within an upland environment, but would traverse the head of a major tributary canyon that drains into Walnut Canyon. The road would be properly designed to minimize interference with storm flows into the canyon. The road would be infrequently used for guided tours only, and would likely generate negligible non- point source pollution from motor and exhaust residue. The proposed road would likely have negligible impacts on wetlands, floodplains, and riparian resources within the Walnut Canyon watershed.

Under Alternative 2, dispersed guided hiking would be established in approximately 2 miles of riparian corridor along the east canyon floor. The terrain is rugged and the old Santa Fe Dam access road along the bottom of the canyon would likely be the preferred hiking route. Dispersed hiking along the narrow riparian area would result in occasional trampling of ephemeral channels, stream terraces, and riparian vegetation. Hiking would be prohibited in wetland areas. Depending upon the level of disturbance, stream banks and terraces could erode more easily during infrequent flash floods. The proposed visitor access to riparian resources would likely result in negligible to long- term, minor adverse impacts to wetlands, floodplains, and riparian resources within the monument.

CUMULATIVE EFFECTS

The cumulative impacts of Alternative 2 on wetlands, floodplains, and riparian resources would be the same as those identified for the No- Action Alternative.

CONCLUSION

Under Alternative 2, continued NPS operations and visitor activities above the north canyon rim would have negligible impacts, as with the No- Action Alternative. The impacts of fencing the 1996 boundary expansion areas would be the same as those identified for the No- Action Alternative. The continued existence of the Santa Fe Dam within the monument would also have negligible impacts, as with the No- Action Alternative. The proposed new visitor center along the existing entrance road would be entirely within an upland environment and also would have negligible impacts to wetlands, floodplains, or riparian resources.

An existing primitive road would be upgraded to provide visitor access to the northeast canyon rim. The road would be properly designed to minimize drainage interference, would be used infrequently, and non- point source pollution from motor and exhaust residue would be minimal. The proposed road would likely have negligible impacts. Dispersed hiking would occur in 2 miles of riparian corridor along the east canyon floor, increasing disturbance to stream banks, terraces, and riparian vegetation. Visitor access within this area would likely result in negligible to long- term, minor adverse impacts.

The cumulative impacts of Alternative 2 on wetlands, floodplains, and riparian resources would be the same as those identified for the No- Action Alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation

for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible/irretrievable commitments of wetlands, floodplains, or riparian resources.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

There would be no short-term gains that result in long-term loss of availability or productivity of wetlands, floodplains, or riparian resources.

Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts from NPS operations or visitor activities under the No-Action Alternative. Under Alternative 1, the proposed road along the northeast canyon rim could increase non-point source pollution within the Walnut Canyon watershed and have long-term, minor adverse impacts to riparian resources within the monument. Under Alternatives 1 and 2, dispersed guided hiking activity along the eastern canyon floor would have negligible to long-term, minor adverse impacts to riparian and floodplain resources. Unavoidable adverse cumulative impacts to wetland, floodplain, and riparian resources within the monument would continue from upstream impoundments at Upper and Lower Lake Mary.

ABILITY TO EXPERIENCE PARK RESOURCES

This topic includes analysis of the following broad areas: access to park resources by the general public and by visitors with disabilities; the ability to see the real thing and the ability to experience a minimally affected environment; and the ability of the public to understand park resources and the regional context of the park. Also analyzed were the ability to exercise personal freedom during a park visit, the provision of traditional employee/visitor experiences (interpretation through personal services, and access to favorite sites), and the ability to participate in traditional recreational activities (biking, climbing, OHV use, etc.).

Methodology

Visitor surveys and personal observation of visitation patterns combined with assessment of what is available to visitors under current management were used to estimate the effects of the actions in the various alternatives. The impact on the ability of the visitor to experience a full range of park resources was analyzed by examining resources mentioned in the park significance statement.

Negligible: The impact is barely detectable and/or will affect few visitors.

Minor: The impact is slight, but detectable, and/or will affect some visitors.

Moderate: The impact is readily apparent and/or will affect many visitors.

Major: The impact is severely adverse or exceptionally beneficial and/or will affect the majority of visitors.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Access to Park Resources by the General Public and for Visitors with Disabilities

Under this alternative, visitor opportunities to experience park resources at Walnut Canyon National Monument would remain concentrated within a small portion of the canyon; the types of experiences would be essentially the same as those that have been available for the past several decades. For the majority of visitors, a one- to two- hour trip incorporating the visitor center museum and observation room, the Island Trail, and/or the Rim Trail would continue to constitute the entire Walnut Canyon experience. This provides only a glimpse of the total resources contained within the canyon and the monument, although this fact might not be evident to all visitors. In a 1998 survey (Lee and Treadwell 1999), visitors were asked what things they would like to see changed at Walnut Canyon. The most common answer (15%) was "nothing." However, specific requests included more trails, including one to the bottom of the canyon; improvements to existing trails; more guided hikes, films exhibits, and information; more access to other monument areas, more access for persons with disabilities, and numerous other changes.

In the 1999 Visitor Survey Card (Machlis 2000) approximately 96% of visitors expressed overall satisfaction with their visit. This reflects the proportion of visitors who rated existing facilities (rest rooms, visitor centers, picnic area, exhibits, services, and recreational opportunities as very good or good. Significantly, only 58% of these same visitors demonstrated understanding of the significance of the park. This reflects limitations of existing

interpretive media, coupled with a lack of visitor access to the full range of resources that could contribute to full understanding and indicates a moderate adverse impact.

Because access to the canyon floor is prohibited within the monument, visitors lack the opportunity to experience the canyon's riparian zone and the meanders and seeps so characteristic of this canyon. The desire to hike to the canyon bottom is occasionally expressed by visitors, and a few (3 of 304 surveyed) mentioned this as one of the things that bothered them about their visit. A larger number (16 of 304) listed this as a change they wanted to make to the park. This is a minor adverse impact to this group of visitors.

The visitor center/museum/observation room has been modified to provide full accessibility, via temporary wheelchair lifts. All visitors now have access to the information desk for personal interactions with park staff, to museum exhibits, the publications sales area, and the observation room and adjacent outdoor patio, both of which provide views into the canyon. Although planned interpretive improvements would serve visitors with other impairments, there are currently no specialized provisions for these groups. Impacts on visitors with disabilities are moderate and beneficial in the visitor center area, depending on individual abilities.

Visitors with mobility disabilities have difficulty reaching even a limited range of park resources elsewhere. Access to cliff dwellings, located along the Island Trail, cannot be provided because of canyon terrain; no equivalent experience is currently available. The Rim Trail, which provides an overlook and view of the canyon and cliff dwellings, is currently accessible to mobility impaired visitors for approximately 100 yards. A pueblo and pithouse, located at the end of the trail, could be accessible for some, with

assistance. This is moderate adverse impact for those who are physically unable to negotiate park trails and are therefore unable to experience any actual structures. However, accessibility to the pithouse and pueblo is being planned concurrent with the GMP.

The quality of this visitor experience is high, although limited by the area available for visitation. The view from the visitor center interior is overwhelming. From here people can see up and down the canyon, across to the south side, and have a fair view of the San Francisco Peaks. Looking at scenery was a very popular activity, identified by 90% of visitors (Lee and Treadwell 1999). It was followed by looking at visitor center exhibits (84%), hiking/walking (83%), and taking pictures (82%). Continuation of these activities is of major, long-term benefit to visitors.

Access to Information Provided by Collections (Ability to see the "Real Thing") and to a Minimally Altered Environment

A number of the park's cliff dwellings can be viewed, visited, and even entered along the Island Trail, and this provides a sense of what the rest of the monument is like. Views of cliff dwellings and access to two other structure types, a pithouse and a pueblo, are provided from the Rim Trail. Guided walks to the historic ranger cabin are available on a limited, seasonal basis. A small number of artifacts are on display in the visitor center. Exploring the ruins is important to 83% of Walnut Canyon visitors surveyed, as are touching and being close to ruins and seeing how prehistoric people lived. Under current conditions, access to numerous cliff dwellings is a major benefit to visitors able to hike the Island Trail. However, other visitors and those interested in other types of dwellings and/or artifacts experience moderate adverse impacts.

To many visitors, the forested Walnut Canyon environment appears natural and minimally altered, despite past changes resulting from logging and dam building (which virtually eliminated water flow through the canyon). "To be in a forested setting" was rated as moderately important by visitors, and this is achieved along the 3-mile entrance road, at adjacent picnic areas, and along interpretive trails. All of these are located within the small area available for concentrated public use and are subject to the sights and sounds of traffic, other visitors, and modern facilities. The ability to experience this perceived natural environment is a moderate benefit available to all visitors; the inability to venture farther from the modern human environment represents a minor to moderate adverse impact.

It is often difficult to find solitude in this park for more than a few moments at a time. According to park staff, crowding is common seasonally and can be very severe for short periods of time. Visitation is concentrated in a relatively small area. This is especially true in spring, when numerous school groups visit simultaneously. However, according to the visitor survey, visitors do not generally feel crowded. On a scale of 1 = not at all crowded and 9 = extremely crowded, responses averaged 2.5. A few praised the lack of crowds. However, 20% said there were places where they felt particularly crowded—mentioned were the Island Trail and the visitor center, the two primary visitor use areas.

Annual visitation at Walnut Canyon increased 74%, from 70,585 in 1979 to 122,544 in 1999. The perceived uncrowded atmosphere is a moderate benefit to today's visitors; deterioration of this quality would be a moderate adverse impact.

Sunsets, sunrises, and the night sky are outside of normal visitor experience because the park is open at most from 8 a.m.

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to 6 p.m. Crepuscular and nocturnal animals are also not observed by visitors because of the park closure times. Exceptions occur occasionally during summer evening programs. Impact on the park experience is negligible.

Natural sounds, particularly those of birds and of wind in the trees, predominate at times. However, most locations are within sight or sound of the visitor center, parking area, entrance road, and/or other visitors. Occasional intrusion is created by visitors yelling into or across the canyon to produce echoes. Sounds, smells, tranquility, peace and quiet, and related topics were mentioned by many people as things they most enjoyed about their visit to Walnut Canyon. Preservation of this aspect is a major long- term benefit.

Visitor activities are fairly regimented, with use restricted to established roads and trails. Access to the ranger cabin and other resources is limited to ranger- guided tours. However, a variety of less- structured opportunities exist immediately outside park boundaries on USFS lands making this impact negligible to minor for most visitors.

Effects on Ability of Public to Understand Park Resources and Regional Context

The biodiversity of Walnut Canyon is interpreted in the visitor center and along the Rim and Island Trails. People can discern broad changes in vegetation on the different slopes, top, and bottom of the canyon and gain understanding of the importance of native plants to prehistoric peoples.

Museum exhibits, wayside exhibits along the two trails, ranger- guided tours, and sales publications interpret various cultural and natural features as well as the lifeways of the people who lived in the dwellings. Exhibits are generally outdated and inaccurate, and regional contexts of cultural

and natural resources are not adequately presented. In particular, the oral history of contemporary native tribes and the links between past and present cultures are not evident to the majority of visitors. Even so, interpretive efforts are moderately effective: in 1999, 58% of visitors demonstrated understanding of the significance of the monument, as measured by the Visitor Survey Card project (Machlis 2000). The current lack of a complete and coherent interpretive story is a moderate adverse impact to park visitors. A major interpretive planning effort to replace wayside interpretive signs along trails and roadsides and to redo museum exhibits in the visitor center is under way, concurrent with this general management plan. The result will be a moderate benefit for all visitors.

Traditional interpretive services would continue as in the past, consisting primarily of self- guiding trails, ranger- led hikes, and occasional cultural demonstration programs. Of visitors surveyed (Lee and Treadwell 1999), 27% reported talking to a ranger or listening to an interpretive talk. Continuation of these activities would be of moderate to major importance, both for conveying understanding to visitors and for decreasing physical impacts and ensuring preservation of resources.

CUMULATIVE EFFECTS

The geographic area considered for cumulative effects for this alternative includes the Flagstaff Area monuments, the greater Flagstaff area, and the most adjacent portions of the Coconino National Forest.

In addition to the impacts described above, external forces and actions of other entities could affect visitor ability to experience park resources in this alternative. Primary sources of these additional impacts are the USFS, Grand Canyon National Park, and local residents. Additional detail follows for each.

USFS management actions within the area of consideration could work in combination to increase total visitation to Walnut Canyon. These include:

- Forest closures and/or increasing restrictions, fire hazard closures, and similar changes could transfer some visitors to the park.
- USFS "Company's Coming" program and visitor facility expansion could increase interest in visiting nearby park facilities.

Increased visitation for any of these reasons would impact uncrowded visitor experiences within the park, probably to a minor degree at any given time. Increased visitation to the park could be offset by increased use of the forest by traditional park visitors. In this alternative, visitors perceive a generally uncrowded environment from NPS actions and consider this a major benefit. However, visitation projections indicate that crowding would be inevitable within the lifetime of this plan and would become a moderate adverse impact. The cumulative impact would be moderate and adverse.

Changes in visitor use patterns and transportation at Grand Canyon National Park could result in visitation changes at Walnut Canyon:

- visitation could increase, especially by those seeking the independent drive-through experience no longer available at Grand Canyon.
- visitors arriving from Grand Canyon could have more time to spend, because of traffic management there (no stops at viewpoints).

Increased visitation and/or increased length of stay would impact uncrowded visitor experiences within the park, probably to a minor degree. In this alternative, visitors perceive a generally uncrowded environment from NPS actions and consider this a major benefit. However,

visitation projections indicate that crowding would be inevitable within the lifetime of this plan and would become a moderate adverse impact. The cumulative impact would be moderate and adverse. Increased length of stay by visitors would also impact ability to understand park resources, since these visitors would probably devote more time to visitor center exhibits, wayside exhibits, interpretive programs, or otherwise learning about the park. In this alternative, a major benefit would be expected from NPS actions. The cumulative effect would be the same.

Increased growth of Flagstaff could increase park visitation by local residents. Possible effects:

- visitation could increase
- the number of repeat visits could increase, as residents return for more information and/or additional experiences
- use of park resources for traditional recreational activities (biking, hiking, etc.) could increase

Increased visitation would impact uncrowded visitor experiences as described above, probably to a minor degree. Cumulative impact would remain moderate and adverse. Repeat visits could impact demand for traditional employee/visitor experiences and encourage more variety in interpretive programs offered. In this alternative, this would be a moderate to major benefit to visitors. In this alternative, for traditional recreational activities, minor to moderate benefits would be expected. Addition of such activities would be of negligible impact.

Summary. In this alternative, cumulative impacts of NPS and external actions would cause no measurable change to visitor ability to experience park resources.

CONCLUSION

The No- Action Alternative would result in moderate benefits for many visitors, particularly those with an interest in cliff dwellings and with the physical ability to walk to them. Recently improved access to the visitor center and its resources represents a major benefit for visitors with physical disabilities and those wishing to examine exhibits and artifacts.

Continuation of traditional interpretive programs would provide moderate benefits for all visitors in understanding of park resources and their significance. The ability to enjoy the scenery and a minimally altered environment, and to do so in a relatively quiet, uncrowded atmosphere, would continue as a moderate benefit in the near future, but would be increasingly impacted by expected visitation increases in the future.

This alternative would result in minor adverse impacts to visitor experience by continuing to limit access to the full range of park resources, including the opportunity to visit prehistoric sites other than cliff dwellings. Visitors with disabilities would suffer moderate adverse impacts due to continued inaccessibility of most structures and other resources related to park significance. Some visitors will experience minor to moderate adverse impacts from the lack of opportunity to explore beyond the limited developed area now available for public use. There are also impacts that are less severe.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning

documents, there would be no impairment of the park's resources or values.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

Effects on Access to Park Resources by the General Public and for Visitors with Disabilities

This alternative would expand the area open to visitation to include more of the park's variety of natural and cultural resources. The canyon floor, and associated habitats and microclimates would remain closed, as would the south rim. More of the north rim and more archeological sites would be available, allowing visitors a more complete understanding of the kinds of archeological structures that make Walnut Canyon unique: they could visit cliff dwellings, rim structures, First Fort, and the historic ranger cabin. New guided walks would be provided to archeological sites along the east and west rims of Walnut Canyon, and an existing gravel road would be upgraded to provide a new scenic drive, with interpretive waysides, along the north rim. The opportunity to experience this greater diversity of sites and their settings would be a moderate benefit to overall visitor experience.

Offices would be removed from the visitor center, creating space for expanded museum exhibits and interpretive programs and contributing to greater visitor understanding and appreciation of both cultural and natural resources. This would be a moderate benefit for visitors. Moderate short- term adverse impacts would occur for visitors during visitor center remodeling, when access to exhibits would be limited or nonexistent. However, this impact would be mitigated by increased ranger presence, special interpretive programs, and temporary exhibits.

Remodeling of the visitor center and construction of a trail from the new parking area would include a fully accessible design, to replace the existing wheelchair lifts and eliminate barriers for visitors with all types of disabilities. New museum exhibits would be designed for universal accessibility. Guided motorized trips would provide new opportunities to experience First Fort and other archeological sites firsthand, allow more opportunities to view wildlife habitats, and make natural soundscapes and natural environments more accessible to all. As described in the No- Action Alternative, the Rim Trail would be improved to provide accessibility for visitors with mobility impairments. These improvements would be a major benefit.

The south rim of the canyon would remain closed to visitation. This would be a negligible to minor impact, based on the number of these park users.

Hiking, biking, and horseback riding would occur on existing roads and trails on the rim in portions of the newly acquired lands in the western part of the monument. Climbing would be redirected to locations outside the park. New orientation and interpretive exhibits at trailheads, road junctions, and the park entrance would inform visitors of recreational opportunities available within the park and on adjacent lands. Impacts would range from minor adverse for those whose preferred uses would be removed from the park to minor benefit because of the availability of increased information.

Effects on Access to Information Provided by Collections (Ability to See the "Real Thing") and to a Minimally Altered Environment

Cliff dwellings, a pithouse, and a pueblo would still be available via the Island and Rim Trails, as described under the No- Action Alternative. Additional dwellings could be viewed from a distance on guided

tours and along the new scenic drive. Also, First Fort would be opened to visitation on guided tours, providing visitors the opportunity to experience firsthand one of the sites that makes Walnut Canyon's archeology unique. The remodeled visitor center would provide space for new interpretive exhibits and the display of a greater diversity of artifacts. All of these expanded experiences would provide moderate beneficial impacts for park visitors.

As described under the No- Action Alternative, the Walnut Canyon environment is perceived by many visitors as less altered than it actually is, even within the existing developed area. This alternative would expand access to a natural- appearing environment along more of the canyon rim and would provide new opportunities to leave the modern human environment, via guided tours and the new scenic drive. This would be a moderate beneficial impact for park visitors.

In addition, guided tours would provide an opportunity to compare firsthand the differences between relatively undisturbed archeological sites and the highly stabilized sites along the Island Trail. The No- Action Alternative provides fewer such opportunities because visitor attention is directed primarily to structures that are already impacted and stabilized. This would result in moderate benefits to visitors.

More views of the meandering nature of the canyon and of the San Francisco Peaks would be available from the rim trails and scenic drive. Removal of congestion from the canyon's edge might increase the chances of visitor encounters with wildlife. The Natural Area Recreation Zone in the western part of the park would provide an even greater opportunity for viewing wildlife because fewer people would be likely to visit this area. Because time is limited for most Walnut Canyon visitors,

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not all would take advantage of these new opportunities. Beneficial impact would be minor to moderate.

The opportunity for visitors to experience solitude would be enhanced in this alternative. In contrast to the relatively congested visitor center and Island and Rim Trail areas, guided tours along the rims would provide opportunities for small groups of people to enjoy quiet areas of the park. Spreading out use through a larger area of the park would mean that encounters with other visitors (even in the busier areas) would be reduced as well; it would also mitigate future expected visitation increases. Preservation of uncrowded experiences would be a moderate benefit for all visitors.

Impact to night skies would remain a negligible impact, as in the No- Action Alternative.

Physical alterations related to this alternative (construction of the new office building, parking lot and trail, and remodeling of the visitor center) would result in moderate, but short- term, adverse impacts for visitors present during the construction period.

Removal of the activity and noise associated with a busy parking lot would increase visitors' ability to enjoy the natural sounds of the canyon and enhance opportunities to see and hear wildlife along the rim. This would be a moderate long- term beneficial impact for all park visitors.

Because the guided activities would limit numbers of people and because they would emphasize places farther from the developed area, visitors would have a greater opportunity to experience natural soundscapes. However, they would not be able to explore these areas alone. This would be a moderate benefit to park visitors.

Effects on Ability of Public to Understand Park Resources and Regional Context

Offices would be removed from the visitor center, allowing the entire building to be remodeled for a variety of visitor orientation, interpretation, and education programs that are not feasible under the No- Action Alternative. Space available for museum exhibits would increase, and more artifacts would be displayed. Expanded cultural demonstration programs would more readily convey the links between the "old ways" of the Sinagua and the contemporary lifeways of American Indians. Indoor meeting space in which to assemble a group of visitors, especially in bad weather, would be available for the first time, and interpretive programs would no longer be dependent on weather. Increased quantity and quality of interpretation in and near the visitor center, at trailheads, and at the park entrance would provide a major benefit to visitor understanding and ability to experience the park.

Significantly different types of archeological sites would be open to visitation via guided trips, allowing greater understanding of the complete cultural history of the area. New wayside exhibits would help visitors understand the relationship of natural resources to the lives of cultures both past and present. This would be a moderate benefit to park visitors.

Interpretive programs would continue as described under the No- Action Alternative, and additional guided tours, both walking and driving, would be offered in areas not previously open to the public. Indoor space would be available in the remodeled visitor center for cultural demonstrations, interpretive talks, and other programs. These additional programs would be a moderate benefit.

CUMULATIVE EFFECTS

The geographic area considered for cumulative effects for this alternative includes the Flagstaff Area monuments, the greater Flagstaff area, and the most adjacent portions of the Coconino National Forest.

In addition to the impacts described above, external forces and actions of other entities could affect visitor ability to experience park resources in this alternative. Primary sources of these additional impacts are the USFS, Grand Canyon National Park, and local residents. Additional detail follows for each.

USFS management actions within the area of consideration could work in combination to increase total visitation to Walnut Canyon. These include:

- Forest closures and/or increasing restrictions, fire hazard closures, and similar changes could transfer some visitors to the park.
- USFS "Company's Coming" program and visitor service facility expansion could increase interest in visiting nearby park facilities.
- New information services could spread visitor use more evenly over facilities and features of both agencies.

Increased visitation for any of these reasons would impact uncrowded visitor experiences within the park, probably to a minor degree at any given time. Increased visitation to the park could be offset by increased use of the forest by traditional park visitors. In this alternative, a major benefit is expected from NPS actions. The cumulative impact would remain the same.

Changes in visitor use patterns and transportation at Grand Canyon National Park could result in visitation changes at Walnut Canyon:

- visitation could increase, especially by those seeking the independent drive-through experience no longer available at Grand Canyon.
- visitors arriving from Grand Canyon could have more time to spend, because of traffic management there (no stops at viewpoints).

Increased visitation and/or increased length of stay would impact uncrowded visitor experiences within the park, probably to a minor degree. In this alternative, a major benefit is expected from NPS actions. Increased length of stay by visitors would also impact ability to understand park resources, since these visitors would probably devote more time to visitor center exhibits, wayside exhibits, interpretive programs, or otherwise learning about the park. In this alternative, a major benefit would be expected from NPS actions. The cumulative effect would be the same.

Increased growth of Flagstaff could increase park visitation by local residents. Possible effects:

- visitation could increase
- the number of repeat visits could increase, as residents return for more information and/or additional experiences
- use of park resources for traditional recreational activities (biking, hiking, etc.) could increase

Increased visitation would impact uncrowded visitor experiences as described above, probably to a minor degree. Repeat visits could impact demand for traditional employee/visitor experiences, and encourage more variety in interpretive programs offered. In this alternative, this would be a major benefit to visitors. In this alternative, for traditional recreational activities, impacts ranging from minor adverse to minor benefit would be expected from NPS actions. Additional such activities

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would be of negligible impact. Cumulative impacts would remain the same.

Summary. In this alternative, cumulative impacts of NPS and external actions would cause minor change to visitor ability to experience park resources.

CONCLUSION

This alternative would result in major benefits to visitors wishing to experience a greater variety of park resources than are available under the No- Action Alternative. Removal of offices from the visitor center would alleviate crowding and create space for new expanded museum exhibits, artifact displays, and indoor interpretive programs for visitors and organized school groups- all major benefits for visitor understanding and viewing of the "real thing." Remodeling of the visitor center would also provide major benefits in accessibility: physical barriers (multiple building levels and stairs) would be resolved to provide full accessibility and exhibits would be designed for use by visitors with a variety of physical and mental impairments. A new scenic drive would provide views of additional cliff dwellings and other types of structures, some relatively undisturbed, which are not available under the No- Action Alternative. This experience would be accessible.

Removal of the busy parking lot from the canyon rim and spreading out use along the rim would create a less crowded visitor experience and enhance the ability to hear natural sounds, both moderate benefits. Because all visitors would no longer be confined to the existing developed area, there would be opportunities to experience new scenic views of Walnut Canyon and to enjoy a minimally altered environment, both moderate benefits. Traditional interpretive programs and cultural demonstrations would continue (a moderate benefit), together with new guided tours of the scenic drive and hike to First Fort.

This alternative would result in moderate short- term adverse impacts to several aspects of visitor experience during construction and remodeling of the existing developed area, but these would be short term. There would be minor to moderate impacts to personal freedoms and traditional recreational activities resulting from zoning of newly acquired lands and removal of some uses from the park. These impacts would be partially mitigated by increased on- site information on regional recreational opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

Effects on Access to Park Resources by the General Public and for Visitors with Disabilities

In this alternative, the visitor center function would be relocated to the I- 40 junction, creating a quieter experience within and on the rim of the canyon. The existing visitor center building would be restored to its original CCC configuration to preserve canyon views. This would be a major benefit, affecting all visitors.

A more complete understanding of the kinds of archeological structures that make

Walnut Canyon unique would be available to visitors: they could experience cliff dwellings, rim structures, First Fort, and the historic ranger cabin. Visitors would also have greater opportunities to experience natural habitats, including the canyon floor and its regionally rare riparian communities. Most of these experiences would occur via guided tours and would constitute a moderate benefit. The Island Trail would remain as in the No- Action Alternative, and the Rim Trail would be improved for greater accessibility.

The western end and the south side of the park would be closed to visitation; a minor adverse impact based on current use levels.

Remodeling of the existing visitor center and construction of the new visitor center building at I- 40 would ensure full accessibility to both structures for visitors with physical, hearing, vision, mental, and other disabilities. Exhibits and services would be designed for universal accessibility and would include equivalent experiences for those resources that could not be made accessible. This would be a moderate beneficial impact.

Resources along the Island Trail would remain inaccessible to the physically impaired, because of terrain. The Rim Trail would be improved to provide full accessibility at least to the pithouse and pueblo, in addition to the existing accessible overlook. Improved accessibility to a wider range of resources would be a major benefit. Ranger- led walks along the rims, to First Fort, and into the canyon would be on rough terrain, preventing most visitors with physical disabilities from entering these newly opened areas. Adverse impacts would still exist, because not all natural and cultural sites could be visited, but these impacts would mitigated by alternative experiences incorporated into visitor center exhibits and possibly elsewhere.

Changing the existing visitor center back to its original CCC configuration would enhance the scenic quality of views from the Island Trail. This would be a minor beneficial impact for park visitors.

People could view more of the meandering nature of this canyon from the rim and from within the canyon than under the No- Action Alternative. Unique scenic perspectives would be seen from within the canyon, and additional wildlife sightings would be possible. This would be a moderately beneficial impact for park visitors.

The south rim of the canyon would be closed to visitation; the relatively small amount of visitor use that previously took place informally there and within newly acquired portions of the monument would not be permitted under the zoning of this alternative. This would be a negligible to minor impact, based on the number of these park users.

Personal freedoms might be restricted at times, depending on the future need to regulate visitation numbers. Those visitors arriving at peak times might be unable to visit when they wished, or might be required to arrive by some form of shuttle vehicle. This would be a moderate to major adverse impact, but would be offset by the benefits described above (effects on uncrowded visitor experiences) for those allowed to enter the park.

Hiking, biking, and horseback riding would be directed to the Arizona Trail and other areas outside the park. The adverse impact would be negligible to minor.

Effects on Access to Information Provided by Collections (Ability to See the "Real Thing") and to a Minimally Altered Environment

Cliff dwellings, a pithouse, and a pueblo would be available via the Island and Rim Trails, as described under the No- Action

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Alternative. The historic ranger cabin would be considered for a self-guided trail, rather than guided access only, as in the No-Action Alternative. First Fort would be opened to visitation on guided tours (involving a drive along existing U.S. Forest Service roads and an extended hike), providing visitors the opportunity to experience firsthand one of the sites that makes Walnut Canyon's archeology unique. The new visitor center would provide space for new interpretive exhibits and the display of more artifacts. More specialized information and assistance would be available at the remodeled CCC building, which could also be appreciated for its historic architecture and relationship to park history. Collectively, these expanded experiences would provide major benefits for park visitors.

Guided hikes would provide an opportunity for visitors to experience the canyon floor and its associated biological communities.

As described under the No-Action Alternative, the Walnut Canyon environment is perceived by many visitors as less altered than it actually is, even within the existing developed area. This alternative would expand access to a natural-appearing environment along more of the canyon rim and in the canyon bottom and would provide new opportunities to leave the modern human environment, via guided tours. This would be a moderate beneficial impact for park visitors.

Removal of existing facilities near the rim would result in moderate short-term adverse impacts during the demolition period. Long-term impacts, following rehabilitation and revegetation of the area, would be moderately beneficial by providing more natural surroundings.

In addition, guided tours would provide an opportunity to compare firsthand the differences between relatively undisturbed archeological sites and the highly stabilized

sites along the Island Trail. The No-Action Alternative provides no such opportunity, since visitors encounter only structures that have already been impacted and stabilized. This would result in moderate benefits both to visitors and to archeological sites, owing to greater appreciation for their fragility.

The opportunity for visitors to experience solitude would be greatly enhanced in this alternative by removing most facilities from the canyon rim. Spreading out use through a larger area of the park would mean that encounters with other visitors (even in the busier areas) would be lessened as well. The possibility of regulating numbers of visitors would ensure less crowded conditions in the park if/when faced with future visitation increases. There would be a moderate to major beneficial impact to park visitors afforded a relatively uncrowded experience.

Sunsets, sunrises, and the night sky would be outside of normal visitor experience because the park and entire entrance road would be closed at night. Crepuscular and nocturnal animals would also not be observed by visitors because of the park closure times. Exceptions occur occasionally during summer evening programs. This would remain a negligible impact, as in the No-Action Alternative.

Physical alterations related to remodeling of the visitor center and vicinity would result in moderate to major, but short-term, adverse impacts for visitors present during the construction period.

The natural soundscapes and tranquil setting of the canyon would be enhanced by removing most facilities from the rim. This action would enhance visitor ability to enjoy the natural sounds of the canyon and opportunity to see and hear wildlife along the rim. This would be a major long-term beneficial impact for all park visitors.

Because the guided activities would limit numbers of people and because they would

venture to places more removed from the developed area of the park, visitors would have a greater opportunity to experience natural soundscapes. This would be a moderate benefit to park visitors.

Effects on Ability of Public to Understand Park Resources and Regional Context

Construction of the new visitor center at the I-40 junction would provide orientation and interpretation for visitors before they encounter park resources and would enhance their ability to plan their activities. Space would be available for enhanced museum exhibits, artifact displays, interpretive programs, and educational programs for large groups. Additional cultural demonstrations could be provided for larger groups of visitors. Such programs readily convey the links between the "old ways" of the Sinagua and the contemporary lifeways of American Indians. The existing CCC visitor center would provide in-depth learning opportunities in a more personal setting. These changes in fixed interpretive services would be a major beneficial impact to visitors.

Physical alterations related to remodeling of the existing visitor center building and vicinity would result in moderate to major, but short-term, adverse impacts for visitors present during the construction period. Most impacts could be mitigated by ensuring completion of the new visitor center, complete with interpretive exhibits, first.

Interpretive programs would continue as in the No-Action Alternative, except that the ranger cabin might be a self-guided experience rather than ranger-led.

Opportunities for in-depth interpretive and educational presentations would increase, using the remodeled CCC visitor center. The new visitor center would offer

additional opportunities for visitor interactions with rangers.

Significantly different sites would be open to visitation via longer guided hikes, allowing greater understanding of the complete cultural history of the area. Impact would be moderate to major benefits.

CUMULATIVE EFFECTS

The geographic area considered for cumulative effects for this alternative includes the Flagstaff Area monuments, the greater Flagstaff area, and the most adjacent portions of the Coconino National Forest.

In addition to the impacts described above, external forces and actions of other entities could affect visitor ability to experience park resources in this alternative. Primary sources of these additional impacts are the USFS, Grand Canyon National Park, and local residents. Additional detail follows for each.

USFS management actions within the area of consideration could work in combination to increase total visitation to Walnut Canyon. These include:

- Forest closures and/or increasing restrictions, fire hazard closures, and similar changes could transfer some visitors to the park.
- USFS "Company's Coming" program and facility expansion could increase interest in visiting nearby park facilities.
- Management of the new visitor center could spread visitor use more evenly over facilities and features of both agencies.

Increased visitation for any of these reasons would impact uncrowded visitor experiences within the park, probably to a minor degree at any given time. Increased visitation to the park could be offset by increased use of the forest by traditional park visitors. In this alternative, a moderate

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benefit is expected from NPS actions. The cumulative impact would remain the same.

Changes in visitor use patterns and transportation at Grand Canyon National Park could result in visitation changes at Walnut Canyon:

- visitation could increase, especially by those seeking the independent drive-through experience no longer available at Grand Canyon.
- visitors arriving from Grand Canyon could have more time to spend, because of traffic management there (no stops at viewpoints).

Increased visitation and/or increased length of stay would impact uncrowded visitor experiences within the park, probably to a minor degree. Increased length of stay by visitors would also impact ability to understand park resources, since these visitors would probably devote more time to visitor center exhibits, wayside exhibits, interpretive programs, or otherwise learning about the park. In this alternative, moderate to major short-term adverse impacts and major benefits would be expected from NPS actions. The cumulative effect would be the same.

Increased growth of Flagstaff could increase park visitation by local residents. Possible effects:

- visitation could increase
- the number of repeat visits could increase, as residents return for more information and/or additional experiences
- use of park resources for traditional recreational activities (biking, hiking, etc.) could increase

Increased visitation would impact uncrowded visitor experiences as described above, probably to a minor degree. Repeat visits could impact demand for traditional employee/visitor experiences and encourage more variety in interpretive

programs offered. In this alternative, this would be a moderate to major benefit to visitors. For traditional recreational activities, impacts ranging from negligible to minor adverse would be expected from NPS actions. Additional such activities would be of negligible impact. Cumulative impacts would remain the same.

Summary. In this alternative, cumulative impacts of NPS and external actions would cause no measurable change to visitor ability to experience park resources.

CONCLUSION

This alternative would result in moderate benefits to visitors wanting a quieter, more educational experience at Walnut Canyon. The visitor center function would be relocated near the I-40 junction; the existing building would be restored to its original Civilian Conservation Corps (CCC) configuration. This would reduce intrusion of modern structures on the natural and historic scene and enhance views from the rim and from the Island Trail. Other benefits would include ability to hear natural sounds, see a minimally altered environment, and enjoy a less crowded experience throughout the park. The new visitor center would provide space for new museum exhibits, artifact displays, cultural demonstrations, and indoor interpretive programs for visitors and organized school groups. Traditional interpretive programs would continue, and new longer guided tours and hikes would be added to provide moderate benefits.

A greater variety of natural and archeological resources would be available via guided tours and/or self-guided trails. These would include the canyon floor, First Fort, the ranger cabin, and other dwellings, in addition to those available under the No-Action Alternative, and would constitute a moderate to major benefit.

The new visitor center and its exhibits would be fully accessible to visitors with a variety of physical and mental impairments, and would provide equivalent experiences for resources which, because of canyon terrain, cannot be made accessible. More features would be accessible than under the No- Action Alternative: the Rim Trail would be improved to provide access at least to the pithouse and pueblo, and a self- guiding trail to the historic ranger cabin would be accessible. These would be moderate benefits. Ranger- led walks to First Fort and into the canyon, however, could not be made accessible.

This alternative would result in major adverse impacts to several aspects of visitor experience during construction and remodeling in the existing developed area, but these would be short- term. This alternative would consider reservation and/or shuttle systems if necessary to control visitation numbers. Moderate adverse impacts on personal freedoms could result if such systems were implemented. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because there would be no major adverse impacts to resources whose conservation is (1) necessary to fulfill specific purposes in the establishing legislation or proclamation for Walnut Canyon National Monument; (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible or irretrievable commitments of resources.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

There would be no short- term gains affecting long- term productivity.

Unavoidable Adverse Impacts

The No- Action Alternative would result in moderate adverse impacts to visitor experience by continuing to limit access to the full range of park resources, including the opportunity to visit prehistoric sites other than cliff dwellings. Visitors with disabilities would experience major adverse impacts caused by continued inaccessibility of most structures and other resources related to park significance. Some visitors would experience minor to moderate adverse impacts from the lack of opportunity to explore beyond the limited developed area now available for public use.

Alternative 1 would result in moderate adverse impacts to several aspects of visitor experience during construction and remodeling of the existing developed area, but these would be short term. There would be minor to moderate impacts to personal freedoms and traditional recreational activities because of zoning of newly acquired lands and removal of some uses from the park. These impacts would be partially mitigated by increased on- site information on regional recreational opportunities.

Alternative 2 would result in major adverse impacts to several aspects of visitor experience during construction and remodeling in the existing developed area, but these would be short term. This alternative would consider reservation and/or shuttle systems if necessary to control visitation numbers. Moderate adverse impacts on personal freedoms could result if such systems were implemented.

PARK NEIGHBORS; LOCAL, STATE, AND TRIBAL LAND MANAGEMENT PLANS; AND LAND/RESOURCE MANAGING AGENCIES

Methodology

Impact topics were identified through the scoping process, and concerns covered by this section include effects on neighbors' access and emergency response, economic contribution of park to local economies, access to culturally sensitive areas by traditional users, traditional land uses external to the boundary, and possible conflicts between the proposed action and local, state, or Indian tribal land use plans, policies, or controls. Levels of intensity of impacts on park neighbors are as follows.

Negligible: The impact is barely detectable and/or will affect few neighbors.

Minor: The impact is slight, but detectable, and/or will affect a minority of neighbors.

Moderate: The impact is readily apparent and/or will affect many neighbors.

Major: The impact is severely adverse or exceptionally beneficial and/or will affect the majority of neighbors.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Most impacts resulting from this alternative would be of a beneficial nature to NPS neighbors, American Indian tribes, and other land and resource managers.

Cooperative efforts with the USFS have beneficial, moderate, long- term impacts on their resource management programs in the area in terms of interpretation, recreational uses, and resource management.

Cooperative law enforcement activities provide moderate, long- term beneficial impacts to the USFS. The NPS is available to respond to wildfire situations in the immediate area, pending the availability of USFS personnel, resulting in moderate, long- term, beneficial impacts.

Cooperative efforts with the Arizona Game and Fish Department are focused on preserving wildlife and habitat, which results in minor, long- term, adverse impact to that agency in terms of wildlife management workloads. However, there are moderate, long- term benefits in their maintaining healthy and diverse wildlife populations.

The alternative accommodates American Indian access to traditional cultural resources within the monument, resulting in moderate, long- term, beneficial impacts to those users. There may be occasions when they experience minor, short- term adverse impacts resulting from congestion (traffic and public use) during busy visitor periods.

The National Park Service and USFS will continue to communicate during each agencies respective land use and project planning processes. National Park Service input would be directed at resource preservation, land and resource uses, and appropriate visitor uses and recreational activities that do not result in adverse impacts to the monument. Depending upon the intensity of land use and level of impacts on visitor experience and resources across the monument boundary, interagency cooperation could result in minor, short- term impacts to Forest Service administrative and writing workloads. Some forest actions, could require moderate, long- term impacts to the Forest Service staff for enforcing regulations, monitoring resource conditons, and ensuring project

mitigation commitments are met to protect park resources, vistas and natural sounds.

The monument is a component of the Flagstaff Open Spaces and Greenways Plan, and thus provides a moderate, long- term, beneficial impact to the city by providing desirable "park- like" environments adjacent to the urban development.

The entrance road is open 24 hours a day and provides a moderate, long- term, beneficial impact to neighbors who use it for access to USFS lands adjacent to the monument.

Accommodating access to lands on the west side of the monument would have minor to moderate, short- and long- term, and both beneficial and adverse impacts on neighbors in terms of modified access and intrusions during work periods.

Occasionally, visitors are directed to USFS areas to pursue recreational activities not allowed in the monument, but provided for in nearby locations. This could result in minor, short- term adverse impacts to Forest Service workloads in terms of visitor use management activities.

Climbing activities that have occurred in the new lands on the west boundary would be redirected to other areas on the National Forest. This restriction would have minor, long- term, adverse impacts to a very few individuals.

The relocation of climbing activities out of the monument and onto USFS lands could have minor, long- term impacts through increased workloads involved with managing and monitoring this activity.

Existing conditions would have minor, but increasing and long- term, adverse impacts to other land and resource management agencies in terms of administrative workloads, resulting from increased agency cooperation as the city continues to grow and visitation to and recreational demands

on the monument and adjacent forests increase.

CUMULATIVE EFFECTS

The geographic area considered in this alternative includes the city of Flagstaff on the west, the Winona community on the east, Upper and Lower Lake Mary on the south, I- 40 on the north, and the lands generally enclosed by these landmarks.

Changes in visitor and neighbor uses of the monument and growth and development of the city and surrounding areas would result in minor to moderate, short- and long- term adverse impacts to other land and resource managers (USFS, state, city, and Arizona Game and Fish) in terms of increased administrative workloads.

As the city continues to expand nearer the monument there could be moderate, long- term, adverse impacts on other agency staff providing law enforcement and resource protection.

There could be moderate, long- term adverse impacts to the neighboring public who could lose recreational opportunities in lands adjacent to the monument as development encroaches and precludes existing recreational opportunities.

The combined effects of the actions by all land and resource management agencies would result in minor to moderate, short- and long- term, adverse impacts to one another and to park neighbors. The contribution to these impacts resulting from implementing the NPS No- Action Alternative would be minor, primarily a result of changes in visitor and neighbor use areas and activities.

CONCLUSION

Within existing conditions, the management actions of the NPS would provide many beneficial impacts to other agencies, neighbors, and American Indian tribes in terms of cooperative resources

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management, planning, and visitor uses. Existing conditions would result in only minor impacts to the workload of others in terms of additional administrative tasks, interpretive planning, agreement reviews, and joint planning/management efforts.

Growth and development of the city of Flagstaff would create moderate, long-term, adverse impacts to other land and resource managers and neighbors, in terms of additional workloads and loss of recreational areas and opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

The impacts to Forest Service planning and implementation processes would be the same as they are under the No-Action Alternative.

Park neighbors who currently recreate adjacent to and within the west boundary of the monument would experience moderate, long-term beneficial impacts by having enhanced access to monument features, but through controlled entry points. The new lands on the west side of the monument would be available for residential neighbor uses and would be reached from the Arizona Trail that runs near the northwest corner of the monument.

Most existing roads in this area of the monument would be eradicated. Some would be converted to trails for hiking, mountain bike, and horseback access, which would have moderate, long-term, adverse impacts on those neighbors who have traditionally entered this area by motorized vehicle. However, this action would result in moderate, long-term, beneficial impacts

to those neighbors who enter by foot, bicycle, or on horseback. There would be minor, short-term, adverse impacts to some neighbors as natural sounds and vistas are disturbed during actual eradication of roads and trail development activities. There would, likewise, be minor, short-term, adverse impacts to neighborhood recreational users during these work periods, as their access would be restricted at times.

Improvement of the road along the north rim could create interruptions to wildlife movement resulting from increased vehicle traffic. This would require consultation and interaction with the Arizona Game and Fish Department relative to mitigating impacts to wildlife and corridors and would result in minor, intermittent, adverse impacts that would increase wildlife monitoring workloads.

Climbing activities would be redirected out of the monument, as in the No-Action Alternative.

Changes in visitor activities and use areas could result in minor, long-term, adverse impacts to American Indian tribes, because they could experience increased contacts with visitors during traditional uses of areas of the monument. Other implications to American Indian traditional uses would be the same as under the No-Action Alternative.

Additional visitor uses and opportunities in the monument and adjacent area could result in extended stays in the community, which, in turn, could result in moderate, long-term, beneficial impacts to Flagstaff in terms of increased revenues from lodging, dining, and related services.

The development of a new orientation area near I-40, and the relocation of administrative facilities would have minor, short-term, adverse impacts on

neighbors resulting from construction activities (dust, noise, traffic delays).

CUMULATIVE EFFECTS

The geographic area considered in this alternative are the same as in the No- Action Alternative

The growing population of Flagstaff will increase pressure on the USFS and State of Arizona to provide for recreational opportunities for residents. NPS actions, in combination with these other actions, would result in minor to moderate, short- and long- term impacts to other land and resource managers by requiring a commitment of time, funds, and personnel to plan and implement new management strategies in response to changing demands on recreational resources.

Changes in access to lands on the west side of the monument would have minor to moderate, short- and long- term, and both beneficial and adverse impacts to neighbors in terms of modified access and intrusions during work periods.

Neighbors participating in climbing activities in the monument would experience minor, long- term, adverse impacts with the relocation of that recreational area.

A local rancher would experience a minor, long- term, adverse impact in the loss of a very small portion of grazing land to a fenced roadway along the north rim of the canyon.

Changes in visitor and neighbor uses of the monument and growth and development of the city and surrounding areas would result in minor to moderate, short- and long- term adverse impacts to other land and resource managers (USFS, state, city, and Arizona Game and Fish) in terms of increased administrative workloads.

American Indian uses would be accommodated as described under the No- Action Alternative.

The combined effects of the actions by all land and resource management agencies would result in major impacts to one another, and to park neighbors. The contribution to these impacts from proposed NPS actions would be minor, primarily resulting from changes in visitor and neighbor use areas and activities.

CONCLUSION

Management actions in this alternative would provide benefits to other agencies, neighbors, and American Indian tribes in terms of cooperative resources management, planning, visitor uses, and access to traditional cultural resources. There would be only minor impacts to the workload of others in terms of additional administrative tasks, interpretive planning, agreement reviews, and joint planning/management efforts.

Growth and development of the city of Flagstaff would create moderate, long- term, adverse impacts to other land and resource managers and neighbors, in terms of additional workloads and loss of recreational areas and opportunities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

The impacts upon the Forest Service planning and implementation processes would be the same as the No- Action Alternative. The implications of regional growth and impacts to the city of Flagstaff would be the same as the No- Action Alternative.

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There would be major, long- term impacts to park neighbors who currently enjoy recreational opportunities within the new lands added through the 1996 boundary expansion. This alternative would eliminate public uses in this area, which could result in moderate, long- term impacts to the Forest Service as public uses increase on lands adjacent to the monument.

Administrative workloads and resource management actions could increase in response to these increased recreational activities.

The location of a new visitor center near I-40 could have a beneficial, moderate, long-term impact to other land managers, because they could have the opportunity to share their agency messages from this facility. Minor short- term impacts to those agencies' administrative workloads could occur during the preparation of interpretive messages for the public.

The entrance road would be gated during closed hours near I- 40, and on each side of F303. This would have a minor, long- term impact to local neighbors who have used this road for after- hours access to USFS areas; they would be restricted to FR303, which would remain open 24 hours a day and provide reasonable access to the national forest along the north boundary of the monument.

The improved road to the parking area for the First Fort trail would have minimal long- term adverse impacts to the grazing permittee. There would be increased seasonal (summer) visitor traffic and increased contacts with monument users, but the change would create no loss in grazing area.

The new interpretive trail to First Fort could create barriers to wildlife movement and result in moderate long- term impacts to the Arizona Game and Fish Department. That agency would have increased

administrative workloads in animal management and monitoring.

Climbing activities would be redirected out of the monument as in Alternative 1.

The implications to American Indian traditional uses would be the same as those identified for the No- Action Alternative.

CUMULATIVE EFFECTS

The geographic area considered in this alternative is the same as in the No- Action Alternative.

A new visitor center could have minor to moderate short- and long- term impacts on other land managers, by providing an opportunity for them to share their information with the visiting public, but requiring the commitment of resources to prepare the informational messages and media.

Some neighbors would experience a minor long- term adverse impact, because they would lose use of the entrance road during closed hours.

The loss of access to the new lands on the west side of the monument would have moderate long- term adverse impacts to those neighbors who have traditionally used that area for recreational activities. The loss could be replaced in other areas of the National Forest, resulting in minor long- term adverse impacts to Forest Service administrative and management workloads.

A local rancher would experience a minor long- term adverse impact, resulting from increased contacts with monument visitors during busy seasons.

Changes in visitor and neighbor uses of the monument and growth and development of the city and surrounding areas would result in minor to moderate short- and long- term adverse impacts to other land and resource managers (USFS, state, city, and Arizona Game and Fish) in terms of increased administrative workloads.

The implication to American Indians would be the same as identified for the No- Action Alternative.

The combined effects of the actions by all land and resource management agencies would result in minor to moderate impacts to one another, and to park neighbors. The contribution to these impacts from proposed NPS actions would be minor, primarily resulting from changes in visitor and neighbor use areas and activities.

CONCLUSION

The loss of access to new lands on the west side of the monument would create moderate long- term adverse impacts to traditional neighborhood uses of that area.

The elimination and relocation of the climbing area in the monument would have minor long- term adverse impacts to a very few individuals. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible or irretrievable commitments of resources.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

There would be no short- term gains affecting long- term productivity.

Unavoidable Adverse Impacts

Under the No- Action Alternative, cooperative efforts with the Arizona Game and Fish Department are focused on preserving wildlife and habitat, which results in minor long- term adverse impact to that agency in terms of wildlife management workloads. Existing conditions would have minor, but increasing and long- term, adverse impacts

to other land and resource management agencies in terms of administrative workloads, resulting from increased cooperation as the city continues to grow, and visitation and recreational demands on the monument and adjacent forests increase. As the city continues to grow nearer the monument there could be moderate long- term impacts on other agency staff providing law enforcement and resource protection. There could be major long- term impacts to the neighboring public who could lose recreational opportunities in lands adjacent to the monument as development encroaches.

Under Alternative 1, most existing roads in the newly acquired area of the monument would be eradicated. Some would be converted to trails for hiking, mountain bikes, and horseback riding, which would have moderate long- term adverse impacts on those neighbors who have traditionally traveled this area by motorized vehicle. There would be minor short- term adverse impacts to some neighbors as natural sounds and vistas are disturbed during eradication and improvement activities. There would, likewise, be minor short- term adverse impacts to neighborhood recreational users during these work periods. Increased visitor use along the north rim of the canyon to First Fort could be a minor long- term adverse impact to a neighboring rancher, because fencing of the road would result in a very slight reduction in the permitted area. This action could also create a minor intermittent adverse impact on the USFS, and there would be a slight increase in their administrative workload in terms of negotiating with the permittee. Improvement of the north rim scenic drive could create interruptions to wildlife movement, resulting from increased vehicle traffic. This would require consultation and interaction with the Arizona Game and Fish Department relative to mitigating impacts to wildlife and corridors and would result in

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minor intermittent adverse impacts that would increase wildlife monitoring workloads. The relocation of climbing activities out of the monument and onto USFS lands could have minor long-term impacts in the form of increased workloads required for managing and monitoring this activity. Changes in visitor activities and use areas could result in minor long-term adverse impacts to American Indian tribes, because they could experience increased contacts with visitors during traditional uses of areas of the monument.

The USFS is involved in a major planning effort for this area through the Flagstaff Lake Mary Ecosystem Analysis. In that plan, they are considering some reduction in roads, increased monitoring activities, forest closures/restrictions, and forest restoration activities. The increasing population of Flagstaff would increase pressure on the USFS and the State of Arizona to provide for recreational opportunities for these nearby residents.

In Alternative 2, NPS proposed actions, in combination with these other actions, would result in minor to moderate, short- and long-term impacts to other land and resource managers, by requiring a commitment of time, funds, and personnel to plan and implement new management strategies in response to changing demands on recreational resources.

There would be major, long-term impacts to park neighbors who currently enjoy recreational opportunities within the new lands added through the 1996 boundary expansion. Alternative 2 would eliminate public uses in this area, which could result in moderate long-term impacts to the Forest Service as public uses increase on lands adjacent to the monument. Administrative workloads and resource management actions could increase in response to these increased recreational activities.

The entrance road would be gated during closed hours; fees would be collected near I-40 during hours of operation. This would have a minor long-term impact to local neighbors who have used this road for access to forest areas. FR303 would remain open and still provide reasonable access to the national forest along the north boundary of the monument. An improved road to the parking area for the First Fort trail would have minimal long-term adverse impacts to the grazing permittee. There would be increased seasonal (summer) visitor traffic and increased contacts with monument users, but the change would create no loss in grazing area.

The new interpretive trail to First Fort could create barriers to wildlife movement and result in moderate long-term impacts to the Arizona Game and Fish Department. That agency would have increased administrative workloads in animal management and monitoring. The relocation of climbing activities out of the monument and onto USFS lands could have minor long-term impacts through increased workloads involved with managing and monitoring this activity. Changes in visitor activities and use areas could result in minor long-term adverse impacts to American Indian tribes, because they could experience increased contacts with visitors during traditional uses of areas of the monument.

OPERATIONAL EFFICIENCY

Methodology

Operational efficiency, for the purpose of this analysis, refers to adequacy of the staffing levels and quality and effectiveness of the infrastructure used in the operation of the park in order to adequately protect and preserve vital park resources and provide for an effective visitor experience. This includes an analysis of existing and needed staffing levels and of the condition

and usefulness of the facilities and developed features used to support the operations of the park. Facilities include the roads that are used to provide access to and within the park (both administrative and visitor use), housing used for staff required to work and live in the park, visitor orientation facilities (visitor centers, developed and interpreted sites, and other interpretive features), and the necessary administrative buildings (office and workspace for park staff), garages, shops, storage buildings, and yards used to house and store the equipment, tools, and materials used to maintain the constructed facilities and features that support the operations of the park. This also includes the presence of utilities such as phones, sewer, water, and electric and other constructed features used to facilitate the operations of the parks.

In addition to the above, discussion of impacts to park operations focuses on (1) employee and visitor health and safety, (2) ability to protect and preserve resources, (3) staff size, whether staffing needs to be increased or decreased, (4) existing and needed facilities, (5) communication (i.e., telephones, radio, computers, etc.), and (6) appropriate utilities (sewer, electric, water). Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in the Affected Environment section of this document. Definitions for levels of impacts to operational efficiency are as follows:

Negligible: Changes would be so small that it would not be of any measurable or perceptible consequence.

Minor: Changes would be small and, if measurable, the consequences would be small and localized.

Moderate: Changes would be measurable and would have a consequence.

Major: Changes would be measurable and would have substantial consequences.

Effects of the No-Action Alternative: Existing Conditions

IMPACT ANALYSIS

Under the No- Action Alternative operational efficiency would continue in approximately the same manner as it currently exists.

The installation of new wayside and museum exhibits would have long- term impacts that would moderately change operational efficiency in a beneficial manner. Interpretation presented to the visiting public would afford a higher level of awareness of the significance of the resources in the park, and information would be provided regarding use and access restrictions. This in turn would increase the level of protection afforded park resources and reduce the need for law enforcement patrols.

Increasing accessibility of facilities and natural and cultural features would have a negligible to minor impact on to operational efficiency. The impact would be beneficial and long term. It would result in the development of the appropriate infrastructure that would make available certain areas of the park that are currently inaccessible to visitors with disabilities.

Addressing the existing health and safety issues is likely to have a moderate to major, beneficial impact on operational efficiency. Many of the existing deficiencies and health and safety needs in the other facilities in the park would be addressed and mitigated.

The designation of Mexican spotted owl critical habitat would not have a notable impact on operational efficiency. Since the backcountry of Walnut Canyon is closed to unguided visitor use there would be no impact as a result of visitor use. There would, however, be a long- term

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commitment to monitor and maintain the habitat and conduct consultations with U.S. Fish and Wildlife Service. This would marginally increase the workload for resources management staff.

The existing inholding would not have an impact to operational efficiency as long as the existing use of the land does not change. The owner has expressed an interest in developing this property. Any efforts of development would have minor to moderate long- term adverse impacts to operational efficiency. Increased law enforcement patrols would be needed as a result of exposure of park resources to trespass and inappropriate uses. A substantial short- term effort would have to be made to determine the most effective way to protect and eliminate impacts to significant natural and cultural resources. This would have a minor to moderate adverse impact on operational efficiency.

The existing backcountry of Walnut Canyon has never been open to unguided use. Since this alternative would continue this situation there would be no impact to operational efficiency. Additional backcountry closure areas, which are closed to unguided use, may be designated in the 1996 expansion lands once boundary surveys and resource inventories have been completed. Since a number of management activities are already being carried out on the expansion lands, this action would have a negligible long- term adverse impact on operational efficiency. Formalization of the prescribed management use of the backcountry would have a minor, short-term impact on operational efficiency due to the need to increase staff presence in order to effectively implement any change in use of the new lands. This would mostly consist of making contact with users of the area who are unaware that the ownership, use, and access to the area have changed. This impact would be mitigated as the public becomes familiar with the change.

Roadways and Access

Under the No- Action Alternative, Walnut Canyon would continue to be accessed via I- 40 and the three- mile- long entrance road. Additional visitor access would be via FR303, approximately 1/2 mile north of the entrance station. This would have a negligible to minor impact on park operations. Visitors and staff would continue to be exposed to steep and narrow shoulders, with few places to pull off safely in the event of an emergency, and to the risk of hitting large game. There is potential for this situation to increase given the likely growth of the city of Flagstaff and the surrounding areas and the number of visitors likely to visit the Flagstaff area and the scenic destination points in the Northern Arizona and Four Corners regions.

There would be minor to moderate impacts on park operations with the continued use of FR303. It is likely that there would be an increase in both visitor and commuter traffic, resulting in increased accidents.

Continued use of FR128 and FR128c would have a minor to moderate impact on operational efficiency. Given the current inability to physically close any of the roads that provide access up to park boundaries, an increase in use of the associated roads would compound the difficulties that already exist in protecting park resources. This includes entry into areas of the park that are closed to visitation and intentional and unintentional damage to archeological resources. There would be an increased demand on staff to accomplish patrols and to provide 24- hour emergency response.

Visitor Use

Under the No- Action Alternative, visitor use of the park would continue as it exists currently, which would have a negligible, long- term impact on park operations. Park operations currently work reasonably well,

because most visitor uses are concentrated at the visitor center. There would be continued inability to provide immediate contact when visitors enter the park, and there would still be no staff present to provide orientation at any of the developed sites. Visitors to these developed areas would continue to be exposed to climatic extremes, poisonous wildlife, and uneven surfaces in and around interpreted features.

Facilities

Implementation of the No- Action Alternative would have a minor to moderate, long- term adverse impact on park facilities. The existing visitor center would remain inadequate and obsolete. Although some improvements would be made, it would still be in need of major upgrading and remodeling.

The existing parking lot would continue to be insufficient to handle the visitor demand. Conflicts would continue to exist between pedestrians and vehicles.

Many of the existing deficiencies and health and safety needs in other facilities would remain, and worsen if not addressed.

Utilities

The No- Action Alternative would have a minor to moderate, long- term adverse impact on the utilities in the park. Without improvements, the park would continue to be subjected to repeated brown- and blackouts. Overall, this would have a constant and long- term adverse impact on the ability to conduct business and the quality of life of the employees that reside in the park.

Staffing

Implementation of the No- Action Alternative would have a minor to moderate long- term adverse impact on staffing within the park. Existing staff levels are deficient, and there are serious limitations on the park's ability to provide adequate and

acceptable levels of visitor services, resource protection and preservation, and maintenance of facilities.

CUMULATIVE EFFECTS

The geographic area of consideration in this alternative includes the city of Flagstaff on the west, I- 40 on the north, FR128 on the east, and Anderson Mesa on the south.

Growth and development of the city of Flagstaff and the outlying communities would have a minor to moderate long- term effect on operational efficiency. The most significant effect would be an increase in the number of visitors coming to the park. Increased growth would also mean that commuter traffic from the outlying communities, such as Cosnino or Winona, would increase, resulting in an increase in the need for law enforcement patrols and emergency response.

Increased growth of the surrounding communities would increase the interest and demand to access USFS land surrounding the park. Such use could result in unauthorized entry to closed areas of the park, with possible intentional and unintentional impacts to park resources. This could have minor to moderate long- term impacts on operational efficiency, resulting in an increased need for law enforcement patrols to protect to protect park resources

The USFS is considering increasing use and access regulation, including the closure of a number of nonessential roads, regulation of off- road driving, and the development of definable trail systems. Implementation of these actions would reduce the need for NPS patrols along park boundaries for resources protection purposes. If the use of these areas were to increase, there would also likely be a need to provide 24- hour emergency response. The effect of these actions would long term and adverse, but the impacts would be minor.

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Partnerships and ongoing regional planning efforts have the potential to mitigate the impacts described above. The city of Flagstaff, U.S. Forest Service, State of Arizona and Coconino County are currently initiating planning efforts that should facilitate the protection and preservation of lands adjoining the park. The results of these efforts would be long term and beneficial.

CONCLUSION

The No- Action Alternative would result in no substantial change in the operations of the park. The effects of implementing the No- Action Alternative would be minor to moderate. Most of the major roads providing access to the park would likely see an increase in visitor and commuter traffic, which would result in additional congestion and a likely increase in accidents. Maintenance needs would increase. Increased use of all roads leading to the park would compound the difficulties that already exist in protecting park resources, including entry to areas of the park that are closed to visitation and intentional and unintentional damage to archeological resources.

The effects to facilities, utilities, and staffing would be minor to moderate. Without improvement to the facilities or utilities, conditions would worsen. Limitations on current staff levels inhibit the park's ability to provide adequate levels of resource protection and preservation, maintenance of existing facilities, and visitor services. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Effects of Alternative 1: Diversify Opportunities for Visitor Use

IMPACT ANALYSIS

The impacts resulting from the installation of new waysides and museum exhibits, increasing the park's ability to accommodate visitors with disabilities, addressing health and safety issues, designating of critical habitat, managing the park's inholding, and developing management use determinations on the new lands would all be the same as those described for the No- Action Alternative.

Additional impacts to operational efficiency that would occur with the implementation of this alternative include the following:

Roadways and Access to the Park

The entrance road would continue to be used as it is used now, and many of the associated issues and concerns would continue to exist. This should have a negligible to minor, adverse impact on operational efficiency. There would be two changes, however, that would dramatically improve how the public moves through the park. These changes would be moderately beneficial to operational efficiency. They include the following: a new orientation facility that would be constructed at the park entrance at I- 40 and would include a pullout and/or turnaround for vehicles towing trailers, and relocation of the existing visitor center parking lot (except for handicapped and administrative parking) to an area southeast of the intersection of FR303 and the entrance road.

For both actions there would be major, short- term adverse actions requiring extensive compliance and mitigation. There would be substantial initial costs for construction of the parking area, and

additional long- term maintenance would be required.

A new scenic drive would be developed along the north rim, using an existing USFS road, to provide additional views of the canyon and the First Fort area, and opportunities to view wildlife and experience the environment. Initially, this unpaved road would be maintained in a semi- primitive condition for seasonal use, and park staff would be required to escort visitors. However, the road could be substantially upgraded in the future. There would be major, short- term actions requiring extensive compliance and mitigation. There would be substantial initial costs for engineering and construction of the road and parking area at First Fort and long- term maintenance requirements. Additional staff and equipment would be required to provide for visitor use and education and to meet maintenance needs. This would have a minor to moderate long- term adverse impact on operational efficiency.

Hiking, bicycling, horseback riding, and guided hikes would occur on existing roads and trails on the rim in the newly acquired lands in the western part of the monument. Climbing activities would be discontinued. Providing controlled access to the new lands would include the initial costs associated with established trailheads and improved trails. This would have a short- term moderate adverse impact on operational efficiency. Long- term funding and staff would be required to facilitate visitor use, provide educational opportunities, and respond to increased maintenance requirements. This would have a minor to moderate adverse impact on operational efficiency. Guided hikes to the First Fort area on the extreme east side of the park would result in similar impacts to operational efficiency.

All areas of the south rim would be closed to visitor use. FR128c would be gated at the park boundary and used for administrative purposes only. The impact to operational efficiency would be no greater than what currently exists. However, changes in land use policy could require increased law enforcement patrols, which would have a minor, long- term adverse impact on operational efficiency.

Visitor Use

New wayside exhibits would be placed on the entrance road near I-40 to provide visitors with an overview of the monument prior to their reaching the resources. Wayside exhibits would require design and placement in a newly constructed traffic pullout. Ground disturbances would necessitate compliance actions and consultation with the Arizona State Historic Preservation Officer and affiliated tribes. Staff time would be needed to mitigate impacts to cultural and natural resources. There would be short-term requirements of staff in design, construction, and mitigation, and there would be long-term requirements for maintenance of the waysides and for keeping the wayside information current. This would have a negligible adverse impact on operational efficiency.

Facilities

Administrative offices in the existing visitor center would be relocated to new facilities at the intersection of the entrance road with FR303. The existing parking lot would be retained to accommodate the requirements of visitors with disabilities. A new parking area would be constructed a few hundred feet to the north. These would be major actions requiring substantial construction, compliance, and mitigation of impacts to cultural and natural resources. All this would result in some short- term inconveniences to staff. There would be

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substantial initial costs for construction and long- term costs associated with maintenance requirements.

Existing housing and maintenance areas would be retained. Moderate, long- term beneficial impacts of this action would result from removing the majority of vehicle traffic from the rim of the canyon and converting the existing visitor center/administrative offices into a facility that could accommodate expanded visitor service activities and programs. This building would require extensive modification to accommodate wheelchair users and visitors with other disabilities.

Staffing

The actions of this alternative would have minor to major impacts on the staffing component of operational efficiency.

There would be an increase in ranger- conducted visitor uses on the north rim in areas east and immediately west of the visitor center. These actions would require initial inventory and ongoing monitoring of cultural and natural resources and the designation of specific areas to be available for expanded visitor uses. There would be a long- term need for increased staff to provide for this dispersal of visitor use; however, access into new areas would alleviate crowded conditions on the Island and Rim Trails.

Administrative needs would be increased, including purchasing and contracting for supplies, materials, and services, especially during the time when construction is ongoing. This would have a major, short- term adverse impact on operational efficiency.

Maintenance staff would have increased workloads on roads, trails, and facilities, including the maintenance of a new trail and visitor center. They would continue to work in less than desirable maintenance facilities,

which would have a long- term, moderate adverse impact on operational efficiency.

As a result of the proposed new construction, resources staff would have increased workloads associated with consultation, compliance, and clearance of the proposed construction locations. This would have a major, short- term adverse impact on operational efficiency. Minor long- term adverse impacts would occur as a result of resource monitoring and preservation requirements associated with the increased visitor use of the new hiking areas. Operational efficiency would benefit by having adequate office and workspace.

CUMULATIVE EFFECTS

Cumulative effects to operational efficiency under this alternative would be similar to the No- Action Alternative.

CONCLUSION

Implementation of Alternative 1 would have a long- term beneficial impact on operational efficiency. There would be major, short- term impacts resulting from the construction of a new visitor center and parking lot, rehabilitation of the old visitor center, construction associated with the road to First Fort, and access and trail improvements necessary for the increased visitor uses on the western and eastern portions of the park. However, following construction, there would remain only minor to moderate impacts on operational efficiency. Most impacts would be in the form of increased maintenance needs for facilities and trail systems and increased resource protection and preservation needs. This alternative would not fully address the inadequacies with the existing visitor center and parking lot; however, it should improve the work environment for the park staff. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because the identified major adverse impacts are to operational efficiency rather than to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Walnut Canyon National Monument; 2) key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park; or 3) identified as a goal in relevant NPS planning documents, there would be no impairment of the park's resources or values.

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS

The impacts resulting from the installation of new waysides and museum exhibits, increasing the park's ability to accommodate visitors with disabilities, addressing health and safety issues, designating of critical habitat, managing the park's inholding, and developing management use determinations on the new lands, would all be the same as described for the No- Action Alternative.

Additional impacts to operational efficiency that would occur with the implementation of this alternative include the following:

Roadways and Access to the Park

The entrance road would continue to be used as it is used now, and many of the associated issues and concerns would continue to exist. This should have a negligible to minor adverse impact on operational efficiency.

A new fully accessible visitor center and parking area would be constructed near I-40 and the entrance road. The entrance road would be gated and locked during the night at this location and at the intersection of FR303. FR303 would remain open for visitor and local use. An additional gate

would be located just beyond FR303 and the entrance road to eliminate after- hours entry into the park. This would have a minor to moderate, long- term beneficial impact on operational efficiency. It would eliminate unauthorized use of the entrance road and the park and would reduce the need for law enforcement patrols and 24- hour emergency response. Many of the issues associated with the parking area and the visitor center would be eliminated by the construction of the parking area near I-40. This would have a moderate, long- term beneficial impact on operational efficiency. As a result of the proposed construction, there would be major, short- term adverse actions requiring extensive compliance and mitigation. There would be substantial initial costs for construction of the parking area and long- term maintenance requirements, which would have a minor impact on operational efficiency.

Facilities

A new visitor center with offices and associated parking lot would be constructed at the intersection of I- 40 and the entrance road. The modern additions to the existing visitor center would be removed and the facility would be restored to its historic appearance. The remaining portion of the visitor center would be retained for visitor orientation and education purposes. This would have a long- term, moderately beneficial impact on operational efficiency. There would be major actions associated with facility construction, including compliance and mitigation of impacts to natural and cultural resources. There would be substantial initial costs for construction and long- term costs associated with maintenance. Following construction and rehabilitation of the visitor centers, there would be only a negligible to minor adverse impact on operational efficiency.

Existing housing and maintenance facilities would be retained, which would have a

ENVIRONMENTAL CONSEQUENCES

negligible, adverse impact on operational efficiency.

Visitor Use

Self-guided and ranger-led trails would be unchanged. All new lands within the recent boundary expansion would be closed to all entry. Visitor use in the vicinity, including hiking, biking, and horseback riding, would be restricted to the Arizona Trail and adjacent USFS lands. FR128c would be gated at the park boundary and used for administrative purposes only. The impact to operational efficiency would be no greater than what currently exists. However, changes in land use policy could require increased law enforcement patrols, which would have a minor, long-term adverse impact on operational efficiency.

An existing undesignated USFS road would be used for access to the eastern portion of the monument, including guided hikes into the bottom of Walnut Canyon. This would have minor to moderate, long-term adverse impact on operational efficiency. Initial costs would be required for establishment of trailheads and road improvements. Long-term costs would include those for law enforcement patrols for resource protection and those for road maintenance.

Staffing

The actions of this alternative would have minor to major impacts on the staffing component of operational efficiency.

There would be an increase in ranger-conducted visitor uses on the north rim in areas east and west of the visitor center. These actions would require initial inventory and ongoing monitoring of cultural and natural resources. There would be a long-term need for an increase in staff to accommodate this dispersal of visitor use; however, use of new areas would alleviate crowded conditions on the Island and Rim Trails.

Administrative needs would be increased, including the purchasing and contracting for supplies, materials, and services, especially during construction periods. This would have a major, short-term impact on operational efficiency.

Maintenance staff would have increased workloads on roads, trails, and facilities. They would continue to work in less than desirable maintenance facilities, which would have a long-term, moderate adverse impact on operational efficiency.

As a result of the proposed new construction, resources management staff would have increased workloads associated with consultation, compliance, and clearance of the proposed construction locations. This would have a major, short-term adverse impact on operational efficiency. Minor long-term adverse impacts would occur as a result of resource monitoring and preservation requirements associated with the increased visitor use of the new trails.

CUMULATIVE EFFECTS

Cumulative effects to operational efficiency under this alternative would be similar to those identified for the No-Action Alternative.

CONCLUSION

This alternative would have a long-term beneficial effect on operational efficiency. There would be major, short-term adverse impacts resulting from the proposed construction of a new administrative building and parking lot, and existing visitor center rehabilitation. However, following construction and rehabilitation, there would be only minor to moderate adverse impacts on operational efficiency. Most impacts would occur in the form of increased maintenance requirements for facilities. In addition to those mentioned, there would be other, less severe effects as a result of implementing this alternative.

Because the identified major adverse impacts are to operational efficiency rather than to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Walnut Canyon National Monument; 2) key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park; or 3) identified as a goal in relevant NPS planning documents, there would be no impairment of the park's resources or values.

Irreversible/Irretrievable Commitments of Resources

There would be no irreversible/irretrievable commitments of resources.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain

There would be no short- term gains affecting long- term productivity.

Unavoidable Adverse Impacts

Under the No- Action Alternative, most of the major roads providing access to the park would realize a likely increase in visitor and commuter traffic, which would result in additional congestion and a likely increase in accidents, increasing maintenance needs. Increased use of all roads leading to the park would compound the difficulties that already exist in protecting park resources. This includes entry into areas of the park that are closed to visitation and intentional and unintentional damage to archeological resources. The effects to facilities, utilities, and staffing would be minor to moderately adverse. Without improvement to the

facilities or utilities, existing conditions would worsen. Staffing limitations exist that inhibit the park's ability to provide adequate levels of resource protection and preservation, maintenance of existing facilities, and visitor services.

Under Alternative 1, there would be major, short- term adverse impacts, resulting from the construction of a new visitor center and parking lot, rehabilitation of the old visitor center and parking lot, construction associated with a new road to First Fort, and trail improvements necessary for the increased visitor uses on the western and eastern portions of the park. However, following construction and rehabilitation, there would be only minor to moderate adverse impacts on operational efficiency. Most impacts would be in the form of increased maintenance needs for facilities and trail systems and increased resource protection and preservation needs.

Alternative 2 would have major, short- term impacts, resulting from the proposed construction of a new visitor center and parking lot, and existing visitor center rehabilitation. However, following construction and rehabilitation, there would be only minor to moderate adverse impacts on operational efficiency, most of which would be in the form of increased maintenance requirements.



CONSULTATION AND COORDINATION

HISTORY OF PUBLIC INVOLVEMENT

The notice of intent (NOI) to prepare this EIS was published in the Federal Register May 19, 1997. The NOI indicated availability of newsletter #1, from which comments were accepted until June 30, 1997. The first newsletter described purpose and significance statements for all three parks, as well as identifying preliminary issues. A second newsletter, released February 1998, detailed public response to the first newsletter, described final purpose and significance statements, and explained the preliminary range of management zones. A third newsletter, issued November 1998, described the range of preliminary alternatives developed for all three monuments. The fourth newsletter in May 1999 described the decision to prepare a plan concurrently with the Forest Service Flagstaff Lake Mary Ecosystem Area planning process. All comments received through June 1999 were considered in this EIS. The Purpose of and Need for the Plan, Need for the GMP, and Description of Scoping Process sections describe the issues and concerns raised and sort the responses into several categories.

AGENCIES CONSULTATION

A number of meetings were held with staff from the U.S. Forest Service and Arizona Game and Fish Department. These meetings were held to discuss impacts that the alternatives might have on adjacent recreational activities and impacts to wildlife and their movement corridors and to try to ensure that NPS planning would be in support/harmony with their agency planning efforts. Several of these conversations explored the possibility of

joint or comanagement of resources and visitor uses.

TRIBAL CONSULTATION

In keeping with its mandates for tribal consultation, NPS consulted with many American Indian tribes throughout the planning process. Based on ethnographic research efforts and previous consultations conducted for the Flagstaff Area national monuments during the last several years, ten tribes were identified as having potential traditional associations with park lands and resources. They are the Havasupai Tribe, Hopi Tribe, Hualupai Tribe, Navajo Nation, San Juan Southern Paiute Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai Apache Nation, Yavapai-Prescott Tribe, and Zuni Tribe. All ten tribes were contacted by letter and telephone, inviting them to attend an introductory meeting in October 1997. Six of the ten tribes participated in the October meeting, and four participated in a December 1997 consultation meeting. As of February 1998 participating tribes included Hopi, Hualupai, Navajo, White Mountain Apache, Yavapai Apache, Yavapai- Prescott, and Zuni.

At the first two consultation meetings the tribes discussed the purpose and significance statements and agreed on language for the final statements. They also discussed tribal involvement in identifying culturally significant and sensitive resources as well as plans for participation throughout the planning process. Early in 1998 the Hopi, Navajo, and Zuni Tribes agreed to conduct further NPS- sponsored research into tribal associations with park lands and identify particular sensitive resources and management concerns for the EIS. Representatives from three tribes attended

CONSULTATION/COORDINATION

the final tribal consultation meeting in August 1998 and assisted with the development of alternatives. Early in 1999 the Hopi Tribe and Navajo Nation submitted to NPS reports identifying culturally sensitive resources and specific recommendations for the GMP.

All ten tribes originally identified continued to receive newsletters and invitations to consultation meetings throughout the planning process. Tribal interests and concerns were fully considered in the planning process and in the development of alternatives in the GMP.

LIST OF RECIPIENTS

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
Animal Damage Control
Natural Resource and Conservation Service
Animal and Plant Health Inspection Service
Forest Service
 Tonto NF
 Prescott NF
 USFS Regional Office
 Kaibab NF
 Coconino NF, Mormon Lake District
 Coconino NF, Peaks District
Department of Interior
 Fish and Wildlife Service
 Arizona Ecological Services
 Geological Survey
 National Biological Survey
 National Park Service
 Canyon de Chelly NM
 Glen Canyon NRA
 Grand Canyon NP
 Guadalupe Mountains NP
 Hubbell Trading Post NHS
 Montezuma Castle NM
 Navajo NM
 Organ Pipe Cactus NM
 Petrified Forest NP

Pipe Springs NM
Rivers and Trails Conservation
Assistance, Intermountain Support
Office, Santa Fe
Southern Arizona Group
Tonto NM
Western Region

Department of the Army, Corps of
Engineers

Department of Transportation, Federal
Highway Administration

Environmental Protection Agency

U.S. Postal Service

Indian Tribes

Havasupai Tribe

Hopi Tribe

 Cultural Preservation Office
 Water Rights Hydrologist

Hualapai Tribe

Navajo Nation

 Bodaway/Gap Chapter
 Cameron Chapter
 Leupp Chapter
 Tuba City Chapter
 Department of Agriculture
 Historic Preservation Department
 Forest Section
 Division of Economic Development
 Division of Natural Resources
 Lands Department
 Navajo Tribal Ranches

Pueblo of Zuni

 Heritage Historic Preservation

San Juan Southern Paiute Tribe

Tonto Apache Tribe

White Mountain Apache Tribe

Yavapai Apache Tribe

 Cultural Preservation

Yavapai Prescott Indian Tribe

State Government

Department of Environmental Quality
 Forest Service
 Department of Mines and Minerals
 Department of Public Safety
 Department of Transportation
 Design Section
 Parkways and Historic Scenic Roads
 Department of Water Resources
 Game and Fish Department
 Office of the Governor
 State Historic Preservation Office
 Arizona State Parks
 State Land Department
 Forestry Division
 Urban Planning Division

Local Government

City of Flagstaff
 Chamber of Commerce
 City Council
 Convention and Visitor Bureau
 Fire Department
 Police Department
 Public Library
 Unified Public Schools
 Unified School District
 Utilities
 Visitor Center
 Citizens Utilities
 City of Sedona
 Public Library
 Coconino County
 Attorney
 Board of Supervisors
 Department of Community Development
 Highway Department
 Parks and Recreation
 Sheriff's Department
 Supervisors

Doney Park
 Fire Department
 Water
 Kachina Village Fire Department
 Mountaineer Fire Department
 Northern Arizona Council of Governments
 Timberline- Fernwood Fire Department
 Organizations/Businesses
 AandS Distributing
 A.B.A.T.E.
 A5 Adventures
 Absolute Bikes
 Access Fund
 Affordable Housing Coalition
 American Motorcyclist Association
 Andy's Body Shop
 Arizona 4WD Clubs
 Arizona Archeological and Historical Society
 Arizona Bowhunters
 Arizona Cattlemen's Association
 Arizona Riparian Council
 Arizona Rough Riders Four- Wheel Drive Club
 Arizona Snowbowl
 Arizona Snowmobile Association
 Arizona State Association of 4WD Clubs
 Arizona Wildlife Federation
 Arizona- Southern California Rocky Mountain Elk Foundation
 Ascend Arizona
 Aspen Sports
 B A S S
 Babbitt Ranches (Coconino Plateau Natural Reserve Lands)

CONSULTATION/COORDINATION

Babbitt's Backcountry Outfitters
Bellemont Baha'i School
Big Joes Cycles
Book Nest
Canyon Country Outfitters
CCOEH
Central Arizona Grotto
CO Bar Livestock, LTD
Coconino Sportsmen
Cocopai RC and D
Colorado Plateau Forum
Dames and Moore
Darmstadt Elementary School
DBA Hart Ranch
Diablo Trust
DNA Legal Services
Doney Area Plan Committee
Doney Park Interest Groups
Ducks Unlimited Inc.
Earthlight
ENSR Consulting and Engineering
Environmental Action Coalition
Federal Land Exchange Inc.
First United
Flagstaff Film Commission
Flagstaff Hiking Club
Flagstaff Jeep Tours
Flagstaff KOA
Flagstaff Medical Center
Flagstaff Mountain Guides
Flagstaff Riding Club
Flagstaff RV Sales
Flying Heart Barn
Forest Conservation Council
Forest Guardians
Friends of Walnut Canyon
Grand Canyon Trust
Grand Canyon Wildlands Council
Greater Arizona Bicycling Association
Hanks Trading Post
Hart Prairie
Hart Ranch
High Desert Investments
Hitchin' Post Stables
Horse Trails Coalition
IMFAM Associates
Kampground Owners' Association
Karan English
Keep Sedona Beautiful Environmental
Quality Committee
Lake Mary Fishing Boat Rentals
Lockett Ranch Inc.
Loose Spoke
Lowell Observatory
Manterola Sheep Company
Maricopa Audubon
McCoy Motors
Michelback Ranch
Monte Vista Marine
Mormon Lake Lodge
Morrison Brother's Ranch
Mountain Man Events
Mountain Mushers
Mountain Sports
Mountain View Pediatrics
Mountaintop Honey

Museum of Northern Arizona	Sedona Westerners
NAHB	Shapins Associates
National Parks and Conservation Association	Shriner's Club
Native Plant and Seed	Sierra Club
Northern Arizona University	Grand Canyon Chapter
Arizona Historic Commission	Legal Defense Fund
College of Engineering	Plateau Group
Department of Anthropology	Sinagua Trading Post
Department of Geography	Single Track Mountain Bikes
Department of Geology	Sky Ranch Development, Inc.
High Altitude Sports Training Complex	Smith Contracting, Inc.
Outdoors	Southwest Center for Bio Diversity
School of Forestry	Southwest Forest Alliance
Northern Arizona Association of Realtors	Southwest Information
Northern Arizona Audubon Society	Southwest Parks and Monuments Association
Northern Arizona Cattle Growers	SWCA, Inc.
Northern Arizona Flycasters	Tametic Committee
Northern Arizona Grotto	Teton Mountain Bike Tours
Northern Arizona Riding Club	The Arboretum at Flagstaff
Northern Arizona Trust Lands Inc.	The Edge
Northland Yamaha- Kawasaki	The Game Plan
Peace Surplus Outdoor Store	The Nature Conservancy
People for the West	The Wilderness Society
Peterson Lumber Company	The Wilson Foundation
Ponderosa Outdoor/Sled Dog Inn	Total Timber
Popular Outdoor Outfitters	Trust for Public Land
Precision Pine and Timber	University of Arizona College of Agriculture
Prescott Climbers Coalition	Vertical Relief Rock Gym
Prescott College Environmental Center	Voters of Flagstaff
RMRS- Flagstaff	Wildlife Society
Rough Country Bowhunters	Arizona Chapter
Ruff's Sporting Goods	Arizona State University Chapter
S.E.C.	Windmill Ranch
Salt River Project	
Sanderson Ford	

Individuals

There are more than 900 individuals to whom copies of the draft EIS were sent. Prior to printing the final EIS, a mailback card was sent to the mailing list. Those responding received a copy of the final. A complete listing of these names is available from the Superintendent, Flagstaff Areas office, 6400 N. Hwy 89, Flagstaff, AZ 86004.

RESPONSES TO COMMENTS ON THE DRAFT PLAN

The National Park Service received 31 comments on the Walnut Canyon National Monument Draft Environmental Impact Statement / Draft General Management Plan. One was from the Hopi Tribe, seven were from federal, state, and local agencies., seven were from non- governmental organizations, and sixteen were from individuals.

The Council on Environmental Quality (1978) guidelines for implementing the National Environmental Policy Act requires the National Park Service to respond to “substantive comments”. A comment is substantive if it meets any of the following criteria from Director’s Order 12, “Conservation Planning and Environmental Impact Analysis (NPS 1999).

- If questions, with reasonable basis, the accuracy of information.
- It questions, with reasonable basis, the adequacy of environmental analysis.
- It presented reasonable alternatives other than those proposed in the plan.
- It would cause changes or revisions in the preferred alternative.

The Hopi Tribe expressed support for Alternative #2, Emphasize Preservation, but opposed the construction of a new visitor center as proposed in the alternative.

Six comments from individuals expressed opinions about the preferred alternative. All of the six commentators generally agreed generally with the preferred alternative. Three opposed the construction of a new visitor center. One individual requested clarification on uses within the monument.

Responses to Comments Concerning the Boundary Expansion

Two local government agencies, four non-governmental organizations and nine individuals wrote in support of a proposed boundary expansion for Walnut Canyon National Monument.

In early 2002 the National park Service participated in an effort that was initiated to gauge public opinion on support for the proposal to expand the boundaries of the monument. A series of meetings was held with Coconino County Board of Supervisors, Flagstaff City Council, and US Forest Service, Arizona Game and Fish, Friends of Walnut Canyon and other involved and interested parties. Public input was sought.

Following a year of meetings consensus was reached and members of the community clearly expressed a desire to more permanently conserve the lands of the Walnut Canyon area surrounding the monument. Public opinion was divided however regarding the appropriate mechanism for achieving that goal including whether expansion of the boundaries of the monument was needed.

Based on this in put, both the County and City unanimously passed resolutions in late December 2002 that requested assistance from Congress in conducting a study of the lands surrounding the monument. Members of Arizona’s Congressional delegation have submitted federal legislation in support of the study. It is expected that consideration of the

legislation will occurring during development of the Fiscal year 2007 or 2008 federal budget. Revision to the GMP may be required depending upon the outcome of the study.

Of the letters received, some have ideas that were outside the scope of the general management plan / environmental impact

statement. The National Park Service values this input and where applicable it will be taken into account in future plans. However, no response is provided to such comments in the document.

Photocopies of the letters from the agencies and organizations follow. The letters and the responses to them are provided.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 28, 2001

Sam Henderson, Superintendent
Flagstaff Area National Monuments
6400 N. Highway 89
Flagstaff, Arizona 80004

Dear Mr. Henderson:

The Environmental Protection Agency (EPA) has reviewed the Draft General Management Plans/Environmental Impact Statements (DEISs) for **Sunset Crater Volcano, Walnut Canyon, and Wupatki National Monuments** [CEQ #010375-77]. Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The DEISs analyze alternatives for managing and protecting resources in the three National Monuments. Four, three, and five alternatives (including "no action") are considered for Sunset Crater Volcano, Walnut Canyon, and Wupatki National Monuments, respectively. Alternative 1 has been identified as the preferred alternative for Sunset Crater Volcano National Monument. This alternative seeks to provide increased educational opportunities and diverse visitor experiences both within and outside park boundaries. Alternative 2 has been identified as the preferred alternative for Walnut Canyon National Monument. Alternative 2 would preserve untrailed expanses, unfragmented natural systems, and relatively pristine resource conditions throughout much of the park. Alternative 3 has been identified as the preferred alternative for Wupatki National Monument. This alternative attempts to ensure the preservation of sensitive park resources while providing a greater diversity of visitor experiences and locations.

EPA has no specific environmental concerns associated with the preferred management plans for the National Monuments, and accordingly has assigned a rating of **LO (Lack of Objections)** to each DEIS. For more information about EPA's rating system, please see the enclosed "Summary of EPA Rating Definitions." We appreciate the opportunity to review these DEISs. Please submit a single copy of the Final EISs to this office at the same time they are filed

with the Office of Federal Activities at EPA Headquarters. If you have questions about this letter, please contact Leonidas Payne of my staff at 415-972-3847, or by email at payne.leonidas@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa B. Hanf". The signature is written in a cursive style with a large initial "L".

Lisa B. Hanf, Manager
Federal Activities Office

Enclosure: Ratings Summary



United States Department of the Interior

U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 FAX: (602) 242-2513



In Reply Refer To:

AESO/SE
2-21-02-I-037

November 29, 2001

Memorandum

To: Superintendent, National Park Service, Flagstaff Area National Monuments
From: Field Supervisor
Subject: Draft Environmental Impact Statements/General Management Plans for Walnut Canyon, Sunset Crater Volcano, and Wupatki National Monuments

This responds to your October 9, 2001, request for comments regarding the September 2001 Draft Environmental Impact Statements/General Management Plans for Walnut Canyon, Sunset Crater Volcano, and Wupatki National Monuments in Coconino County, Arizona. These general management plans will guide the management of the Flagstaff Area National Monuments for the next 10 to 15 years.

The comments provided below are organized according to the sections of the Draft Environmental Impact Statements/General Management Plans (DEIS/GMP) for each National Monument, with pages and paragraphs noted as appropriate. Our comments primarily focus on the DEIS/GMP for the Walnut Canyon National Monument due to the presence of the threatened Mexican spotted owl (MSO) (*Strix occidentalis lucida*) and designated critical habitat for the MSO within the monument.

**Draft Environmental Impact Statement/Draft General Management Plan
Walnut Canyon National Monument**

PURPOSE AND NEED FOR THE PLAN

NEED FOR THE GMP

Natural Resource Management Objectives

Species of Special Concern (page 14): The DEIS/GMP states that the National Park Service (NPS) must ensure that management of the monument does not *adversely* (emphasis added) impact the MSO or designated critical habitat. The Endangered Species Act requires section 7 consultation whenever a proposed action may affect the MSO and/or designated critical habitat,

Superintendent, National Park Service, Flagstaff Area Monuments

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even if the effects are not adverse. Consultation may be concluded informally if the NPS finds, and we concur in writing, that the action may affect, but is not likely to adversely affect, the MSO.

Species of Special Concern (page 14): The DEIS/GMP states the NPS will regularly monitor the distribution and status of selected species, including rare or protected species. We recommend that MSO protected activity centers (PACs) be monitored so that 100-acre nest or roost buffers (Ward and Salas 2000) may be established per the Recovery Plan for the Mexican Spotted Owl (USDI 1995). Current recommendations to conserve MSO include delineation of a 100-acre buffer around a nest/roost prior to thinning and burning in the PAC.

Wildland Fire (page 15): The DEIS/GMP states the NPS has maintained an active prescribed fire program at Walnut Canyon National Monument since 1990 and will soon prepare a new fire management plan (FMP) and environmental assessment. The plan would identify the appropriate tactics for suppressing wildfires and the objectives for using management-ignited fire. Aggressive suppression tactics are only proposed when human life, property, and adjacent lands are threatened. We recommend a programmatic section 7 consultation for the FMP due to the presence of MSO PACs and designated critical habitat within the boundaries of the monument. In order to implement the FMP while considering the MSO and designated critical habitat within the monument, the effects of such a plan should be analyzed in consultation with the Service.

Special Use Management Requirements

Land Protection (page 21): The DEIS/GMP states that the current landowner of the 291 acre in-holding within Walnut Canyon National Monument is planning some improvements to facilitate restoring the historic dam and reestablishing a reservoir. The improvements could include a road and water well. We support the NPS's land protection plan which recommends fee acquisition of the in-holding.

ALTERNATIVES

DEVELOPMENT OF ALTERNATIVES

Actions Common to All Alternatives

DESIGNATION OF CRITICAL HABITAT (page 40): The DEIS/GMP states that any proposed developments other than nonconsumptive recreation use will require consultation with the Service under the Endangered Species Act. As stated above, section 7 requires Federal agencies to consult with the Fish and Wildlife Service on any action funded, authorized, or carried out that may affect the MSO and/or designated critical habitat; this may include nonconsumptive recreation.

Superintendent, National Park Service, Flagstaff Area Monuments

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ALTERNATIVE DESCRIPTIONS

Alternative 2 (Preferred): Emphasize Preservation

KEY ACTIONS (page 44): The DEIS/GMP states that visitors would have access to the eastern end of the park via ranger-guided hikes. An existing Forest Service road would be upgraded and used administratively to facilitate these guided activities and a parking area would be established within the monument from which the guided hikes would be staged. This area is not designated critical habitat, but is MSO habitat. We recommend that the NPS evaluate the potential for effects to the MSO and MSO habitat. This evaluation may include conducting MSO surveys according to an established survey protocol.

Table 3: Summary of Major Impacts (page 64): The DEIS/GMP states that, under the preferred alternative, continued NPS operations and visitor activities in the north-central canyon area would have negligible impacts to threatened, endangered, or sensitive species. Since this area is proximate to designated MSO PACs and critical habitat, we recommend section 7 consultation for any actions, proposed or on-going, that may affect listed species or critical habitat.

AFFECTED ENVIRONMENT

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Park (page 91): The DEIS/GMP states that the NPS is working with the U.S. Fish and Wildlife Service and U.S. Forest Service to implement the management actions identified in the Recovery Plan for the Mexican Spotted Owl (USDI 1995). Specific actions include monitoring nesting activity and breeding success, protecting critical habitat from wildfire, and managing forest vegetation to conserve specific microhabitat attributes. We look forward to working with the NPS through section 7 consultation to achieve these goals.

ENVIRONMENTAL CONSEQUENCES

LONG-TERM INTEGRITY OF NATURAL SYSTEMS AND PROCESSES

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS (page 143): The DEIS/GMP states that under Alternative 2, visitor access and activity would increase within the proposed Extended Learning Zone along the north-central canyon rim. The NPS determined that visitor use within the proposed Extended Learning Zone would have long-term, minor adverse impacts on natural systems and processes. Since this area is known MSO nesting habitat, we recommend section 7 consultation for any on-going or

Superintendent, National Park Service, Flagstaff Area Monuments

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proposed activities within the boundaries of the monument that may affect the MSO and/or designated critical habitat.

IMPACT ANALYSIS (page 143-144): The DEIS/GMP states that guided hiking activity within the proposed Guided Adventure Zone in the east canyon area would expand visitor use into the canyon floor. The NPS determined that, under Alternative 2, visitor use within the east canyon area would have long-term, moderate adverse impacts to solitary wildlife species unless the area is closed during important breeding and/or migration seasons, and tour frequency and group size are limited. The east canyon area is MSO habitat and we are concerned about the potential impacts of expanded visitor use of this area. Has the NPS surveyed this area for MSO? When were the last surveys conducted? Would this area be closed to visitor use during the MSO breeding season (March 1 - August 31)? We recommend section 7 consultation on the effects of Alternative 2 (Preferred) on the MSO and/or any designated critical habitat.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Effects of Alternative 2 (Preferred): Emphasize Preservation

1

IMPACT ANALYSIS (page 153): The DEIS/GMP states that the NPS would continue to consult with the U.S. Fish and Wildlife Service in order to ensure management actions do not *adversely* (emphasis added) impact the MSO. The NPS would continue to monitor the owl, protect known nesting territories, and preserve specific habitat attributes in accordance with the Recovery Plan for the Mexican Spotted Owl (USDI 1995). As we stated above, this section needs to be modified to state that consultation will occur on actions that *may affect* a listed species or its critical habitat. Increased visitor activity, road improvements to increase access, and the proposed guided hiking area all have the potential to cause harm or harassment to the MSO. The proposed guided hiking area is outside designated critical habitat for the MSO. However, the area does contain MSO habitat and we recommend that any action proposed for this area be reviewed for its potential to affect the MSO.

IMPACT ANALYSIS (page 154): The DEIS/GMP states that approximately 93% of the total area within the monument would be designated a Resource Preservation Zone, and unauthorized entry would be prohibited. Occasional dispersed hiking would continue within the closed area during cultural site preservation projects, resource monitoring studies, scientific research, educational activities, other special uses, and unauthorized hiking. We recommend section 7 consultation for any project that may affect the MSO and/or designated critical habitat.

Loss in Long-Term Availability or Productivity of the Resource to Achieve Short-Term Gain (page 155): The DEIS/GMP states that under Alternatives 1 and 2, road improvements along the northeast canyon rim would provide more convenient access to the east canyon area. "This would increase ambient traffic noise levels and potential disturbance to sensitive wildlife species within the narrow canyon." Activities on Federal lands that may affect the MSO and/or its critical habitat will require section 7 consultation.

Superintendent, National Park Service, Flagstaff Area Monuments

5

Unavoidable Adverse Impacts (page 155): The DEIS/GMP states that the trend of increasing visitor numbers and associated vehicle traffic to the north-central canyon rim could eventually have adverse impacts to sensitive wildlife species. Under Alternatives 1 and 2, proposed road improvements, new trails, and new facilities would potentially increase the risk of establishment and dispersal of nonnative, invasive plant species. Expanding visitor access corridors and use areas along the north canyon rim and into the east canyon floor could increase human presence and noise disturbance to sensitive species within the narrow canyon. Activities on Federal lands that may affect the MSO or its critical habitat will require section 7 consultation.

LONG-TERM INTEGRITY OF WETLANDS, FLOODPLAINS, AND RIPARIAN HABITAT

Effects of Alternative 2 (Preferred): Emphasize Preservation

IMPACT ANALYSIS (page 161): The DEIS/GMP states that the impacts from dispersed hiking within approximately 2 miles of riparian habitat along the east canyon floor would be offset by fencing the 1996 boundary and excluding livestock grazing from the east canyon floor. The affects of each action, recreation and grazing, should be analyzed separately. The removal of one activity may not offset the impacts of the other activity. We recommend section 7 consultation for any action that may affect the MSO or its critical habitat.

CONCLUSION (page 161): The DEIS/GMP states that the continued existence of the Santa Fe Dam within the monument would have negligible impacts, as with the No-Action Alternative. However, the DEIS/GMP states (page 21) that the current landowner of the 291 acre in-holding within Walnut Canyon National Monument is planning some improvements to facilitate restoring the historic dam and reestablishing a reservoir. The improvements could include a road and water well. Whether or not such actions are under the discretion of the NPS, such actions should be considered in the EIS when analyzing the affects of NPS management.

Draft Environmental Impact Statement/Draft General Management Plan Sunset Crater Volcano National Monument

AFFECTED ENVIRONMENT

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Park (page 93): The DEIS/GMP states that "One endangered species, the Mexican spotted owl, is known to occur on nearby U.S. Forest Service lands." The Mexican spotted owl is listed as threatened under the Endangered Species Act.

Draft Environmental Impact Statement/Draft General Management Plan

Superintendent, National Park Service, Flagstaff Area Monuments

6

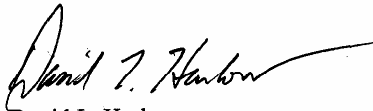
Wupatki National Monument

AFFECTED ENVIRONMENT

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Region (page 99): The DEIS/GMP states that "The endangered Mexican spotted owl (*Strix occidentalis lucida*) is found within the region...." The Mexican spotted owl is listed as threatened under the Endangered Species Act.

We look forward to working with the NPS on finalizing the DEIS/GMP for the Flagstaff Area Monuments and we appreciate the opportunity to comment. Thank you for your consideration of the threatened Mexican spotted owl and its habitat. If we can be of further assistance, please contact Shaula Hedwall (92) 226-1811 or Steve Spangle (928) 226-0250.



David L. Harlow

cc: Field Supervisor, U.S. Fish and Wildlife Service, Albuquerque, NM
Regional Director, U.S. Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
John Kennedy, Arizona Game and Fish Department, Phoenix, AZ
Forest Supervisor, Coconino National Forest, Flagstaff, AZ (Attn: Cecelia Overby)

Literature Cited

USDI Fish and Wildlife Service. 1995. Recovery Plan for the Mexican spotted owl: Vol. I. Albuquerque, New Mexico. 172pp.

Ward, J.P. and D. Salas. 2000. Adequacy of roost locations for defining buffers around Mexican spotted owl nests. Wildlife Society Bulletin 28(3):688-698.

DEIS/GPM Comments for Flagstaff Area Monuments: SJH:jh

RESPONSE TO COMMENTS

1) Language regarding Endangered Species Act compliance has been corrected throughout.

In accordance with Section 7 of the Endangered Species Act, the NPS prepared a Biological Assessment for the Preferred Alternative (Alternative 2). The Biological Assessment includes a detailed analysis of the potential effects on the Mexican spotted owl and bald eagle, both listed as threatened under the Endangered Species Act, and the only Federally-listed wildlife species which are known to occur or potentially occur within Walnut Canyon National Monument. In order to more accurately assess the potential effects of the Key Actions relating to proposed new facilities and increased visitor activities, several of the Key Actions were augmented with new information to estimate total annual visitation numbers.

Additional conservation measures were also developed to eliminate or reduce potential effects. The NPS Biological Assessment was submitted to the U.S. Fish and Wildlife Service during June, 2004, with a determination that the Preferred Alternative: (1) “may affect, but is not likely to adversely effect the bald eagle”; (2) “may adversely affect the Mexican spotted owl”; and, (3) “may adversely effect designated critical habitat for the Mexican spotted owl.” As a result, the NPS entered into formal consultation with the U.S. Fish and Wildlife Service (Consultation Record AESO/SE 02- 21- 02- F- 0037) over effects to the Mexican spotted owl and its critical habitat. The U.S. Fish and Wildlife Service issued a Biological Opinion during June 2005, concluding that implementation of the Preferred Alternative would not likely jeopardize the continued existence of the Mexican spotted owl or adversely modify its critical habitat. The Biological Opinion also concluded that “incidental take” is not likely to occur. The Biological Opinion included conservation recommendations and conditions for reinitiating consultation, which have been incorporated into the mitigating measures section of the Final Draft Environmental Impact Statement/General Management Plan for Walnut Canyon National Monument. In addition, the language pertaining to threatened, endangered, and sensitive species has been edited throughout to provide additional supporting documentation and ensure consistency with the analysis of effects in the Biological Assessment.



United States
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Agriculture

Forest
Service

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COPY

File Code: 1950

Date: February 4, 2002

Sam Henderson
Superintendent
Flagstaff Area Monuments
6400 N. Hwy 89
Flagstaff, AZ 86004

Dear Sam:

Enclosed are comments on the Draft Environmental Impact Statements (DEIS's) for General Management Plans for Sunset Crater Volcano, Walnut Canyon and Wupatki National Monuments.

In these comments I refer to the current Memorandum of Understanding that exists between the Coconino National Forest and Sunset Crater and Wupatki National Monuments. I understand the District staff and your staff are initiating an update of the MOU, and that the update will include items related to Walnut Canyon. The MOU is a good tool for capturing some of the more specific roles and responsibilities than are appropriate at the General Management Plan level.

Although most of the comments that follow identify points of disagreement or areas where language changes are desirable, please note that there are many good things in these documents. Many items reflect the spirit of our efforts to look beyond our own boundaries, and be cognizant of the effects of our management on each other. I am pleased to see the level of cooperative management that is identified, including law enforcement, interpretation job sharing, fire protection and suppression, administrative boundary adjustment, and resource management. It is with these successes in mind that I offer the following comments for each of the National Monuments.

POINTS COMMON TO ALL THREE DOCUMENTS

2

Under Actions common to All alternatives under Partnerships and Regional Planning heading in all three DEISs you mention that per FLEA, there *"will be increased emphasis on monitoring the effects of recreation, grazing, and other human uses on these lands; documentation of unacceptable impacts will provide a basis for management changes to control those effects"* Currently the FLEA document reads, *"Continue active monitoring of cultural and historical sites to impacts from recreation, cattle grazing, firewood cutting and other human uses. Changes in management can occur in response to demonstrated (through monitoring) negative impacts to archaeological resources. Take advantage of available Park Service personnel to assist with monitoring."* I hope there are not misconceptions between the two agencies about the level of monitoring we are suggesting here. Perhaps our two staffs' should be given this as a work item



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for the MOU, to be clear about what we are able to accomplish between the two agencies with our expected levels of staff and funding.

3

You state in the beginning of each DEIS that the General Management Plan is a general planning document that does not make site-specific decisions. However, the documents go on to put a location of the visitor centers on the preferred alternative maps. In addition, some effects sections discuss anticipated effects from constructing the visitor centers. I would suggest that the final locations and effects analysis for visitor center locations be discussed in later, site-specific NEPA documents. The question today is whether or not we agree or disagree with the concept of new visitor centers. See the discussion below related to each Monument.

4

We disagree with some of the conclusions about archaeological effects that occur outside the Monuments as described in all three DEISs. Some examples are in the Wupatki document on page 120 it states *“As the population of Flagstaff grows, recreation impacts on USFS lands and resources will continue to increase, resulting in additional degradation of archaeological sites. As archaeological sites are degraded and destroyed outside the park the relative rarity and importance of these archaeological resources within the Monument will increase.”* The implication that our management would allow degradation and destruction of these resources is not accurate. We would never knowingly allow this to happen, as it would be illegal! It is not that we don't recognize impacts occur, but that your document ties illegal activities and unfounded unsupported damage claims directly associated with multiple-use management. When we find damage occurring we pursue prosecution of illegal activities to the fullest extent of the laws, reference the recent Kinnickinick prosecution. Please rewrite these statements so they do not inaccurately portray multiple-use management as illegally managing the archeological resource.

5

In the *Wetlands, Floodplains and Riparian Effects* Sections Under the Cumulative Effects (for No Action) you write *“much of the land within the watershed could eventually be acquired for development by the City of Flagstaff.”* To say that “much” of the watershed could eventually be acquired misrepresents our current trends in land exchange. These documents, overplay the potential for future land trades. A more realistic scenario would be the current language in FLEA and the RLUTP that discusses conservative changes over time, such as pages 31 and 56 of the FLEA Proposed Action. As an introduction to the land use and growth management and open space elements section of the RULTP, it indicates that the Regional Plan is designating growth boundaries that should be adequate for the next 30 years or more. This concept is repeated throughout the document. Since you also say that the cumulative effects for the action alternatives are similar to those described for No Action, I believe it is important to make this adjustment.

Under the Heading *Methodology* (for the Environmental Consequences Chapter) in all three DEISs you state *“All alternatives were also evaluated based on external factors that, together with the actions of each NPS alternative, could have cumulative impacts. In order to determine cumulative impacts, a cumulative scenario was developed. That scenario included the following actions: On FS lands, there will be some reduction in roads. Monitoring of impacts will increase, but existing activities will continue unless monitoring shows problems. Forest closures/increased restrictions (including those related to fire hazard conditions) may transfer*

some pressure to parks. Increased access to different locations on USFS lands may affect park eligible resources. The FS is currently managing areas next to the City as open space, but would rather exchanges such areas in accordance with regional land use plans. The urban boundary would then move closer to the parks. The FS "Company's Coming" program could affect all

6

three parks." There are many points within this paragraph that don't ring true for me: 1) I am not aware that current trends are for increased access. The ROS objectives and the road management criteria in the FLEA Proposed Action show our intentions for reducing or eliminating roads at the rim's edge, and achieving a well-designed system of roads and trails in the larger watershed; 2) Park eligible resources are not necessarily degraded as a result of increased access. Well-managed use can protect and maintain resources. Our experience to date is that much of the Walnut Canyon has been maintained over the past few years, in spite of increased use of Forest Service trails in the area; 3) There are a few parcels of NF lands within the Urban Growth boundary as proposed in the RLUTP that FLEA suggests ultimately exchanging to the City for community purposes. However, even if these parcels are exchanged, because of their location they do not bring Urban development any "closer" to the Monuments; 4) I agree that FS actions may transfer some recreation pressure to the Monument; 5) The Company's Coming strategy was to increase our ability to respond to increasing recreation demands that are already occurring – not to draw more visitors to areas. In this regard we share the impacts of Company's coming. As written the concept is misrepresented, indicating we are actively pursuing recreational user increases and that this activity will affect park management. Conversely, the concept identifies that we recognize increased pressure whether it is invited or not and the strategy is to be responsive to that inevitable situation.

Under the Decision Points section you mention "Important park goals are to ensure adequate visitor orientation and education and to minimize use impacts. We need to decide whether to accomplish this by increasing facilities and service or by limiting entrance points and visitor circulation." I appreciate the challenge described here. This is a well written decision point that can also be applied to many of the popular sites on the National Forest.

7

On P179 in Walnut, P213 in Wupatki and P182 in Sunset -Under the Effects of the No Action Alternative (existing conditions) – the paragraph that describes the activities considered in the FLEA analysis is outdated. Some of the activities described such as snowplay, motocross, and mineral withdrawal have been removed from the FLEA analysis and are proceeding under separate analysis, are complete, or have been dropped. You might also consider listing other Forest Plan amendment proposals in your effect sections such as the 3-Forest noxious weed strategy and the 5-Forest OHV Amendment. See the FLEA PA for a description and contact person for these projects.

WALNUT CANYON

Major Points

8	<p>P3 Under the heading Park Mission - You mention that NPS has ownership of the entrance road via Public Law 104-333 approved in 1996. We have received your letter describing a solicitor's review of the law. However, as we understand it, the ownership status of this road is still in question. Until that is resolved we suggest changing this language from "added" to "identified".</p>
9	<p>On P38 You indicate that there are three reasons why you would consider a boundary expansion. The third is "...a change in land use or the sale or exchange of State Trust lands that would result in residential or commercial development of these adjacent lands." However, you fail to indicate anywhere previous to this section that the City is currently creating a petition to the State Land Department requesting that these lands be classified for conservation needs under the Arizona Preserve Initiative. This would remove these lands from the possibility of development.</p>
10	<p>P43 Under the heading Key Actions (for Alternative 2 Preferred) you describe a "new fully accessible visitor center and parking area would be built near I-40 at the park entrance. I agree with the concept of a new visitor center. The specific location would be determined through another NEPA analysis and decision and a Special Use Permit would be required from the Forest Service (please make this note in the Final EIS). The I-40 location could be one alternative, however, as we enter into the site-specific analysis, I would like to explore additional alternatives near the Monument.</p>
11	<p>P44 Under the heading Key Actions (for Alternative 2 Preferred) you describe three gates located along the entrance road: one near the I-40 exit and one on each side of FR303. I agree with the concepts of gating the entrance road between the final visitor center location and the Monument. However, I ask that these gates be contingent upon the final location of the Visitor Center and not a stand-alone item. This will ensure that we coordinate access with the Visitor Center location and limit unnecessary changes in public access.</p>
<p><u>Minor editorial comments</u></p>	
12	<p>P12 Under the heading Water Resources – You mention that a settlement about water impoundments in Lake Mary is anticipated in the near future. I would strike the wording "near future" unless you have heard something different than us concerning this settlement. Our understanding of status would indicate that "near" might be misleading or overly optimistic.</p>
13	<p>P20 The Centennial Forest is not listed as a cooperator and you might add them if you feel that is appropriate.</p>

WUPATKI

Major Points

P40 – Under the heading Boundary Criteria – This section describes resources outside of the Monument on National Forest lands that would be desirable to have in NPS ownership – and goes on to say *“The USFS is not supportive of any expansion or modification of Monument boundaries onto FS lands at Wupatki. Because of this, no boundary expansions were presented in Alternative 3, the preferred alternative”*. I agree with this statement. I believe a boundary expansion to the south of Wupatki is not warranted and look forward to continued cooperative efforts in this area.

Under Alternatives Considered but Eliminated – the Basis for Rejection of a Boundary Expansion (to the south of the Monument) was *“This alternative was considered and rejected in light of the current planning efforts of the Coconino NF and their desire to work cooperatively with NPS in managing the resources on lands south of Wupatki. The FS expressed desires to work with NPS to increase efforts to preserve natural and cultural resources and to provide for public uses that would help sustain the integrity of those resources. With participation from both agencies, integrated programs could accomplish resource preservation and visitor use and education without a major boundary expansion.”* You have accurately depicted our position. I encourage my staff and yours to continue work on the FLEA process to outline Forest Plan language changes if needed to continue to meet desired conditions in this area. I also encourage our staff to continue to work on an update of the MOU to outline specific roles, responsibilities and tasks.

P98 – Under the heading Affected Environment you state that the *“NPS remains concerned that USFS management of lands south of the monument is adversely affecting the condition of large watersheds that drain through the monument and leading to instances of poaching... woodcutting, Off road vehicle use, and unauthorized access within the closed area of the Monument. The NPS hopes to alleviate these concerns through increased communication, monitoring ecosystem conditions and better participation in the UFFS planning process. If successful, these efforts could mitigate certain adjacent land use impacts upon resources within the monument.”* I do not see our management of these watersheds as having adverse effects. For example “Poaching” is not a FS management action, although we actively manage against that activity, and work with the Game and Fish Department to take management actions in response to this illegal activity. Woodcutting is regulated thru permit, which specifies amounts, species, and strictly describes types of wood legal to cut. Fuelwood cutting is further managed by area (there is a large portion of the subject area where woodcutting is not permitted. We manage the woodcutting program and would not allow this activity if we determined it was causing resource damages. It has been our experience that removing the dead material of an invasive species (at least where PJ is encroaching into grasslands, see P. 95) is not an adverse affect on watershed. Once Pinyon-Juniper has been removed grasses and forbs come in and occupy those sites. Off road driving is managed by area. A large portion of the area south of the monument is closed to all off road driving where we have made determinations that it is an inappropriate or conflicting use or that resource damage could occur. Off road laws farther

manage driving and regulations and becomes an illegal activity when done in such a manner as to cause adverse effects on the watershed. Not all off road driving adversely affects watershed conditions. There are instances where off road driving causes resource damage, which under our laws and regulations are clearly illegal activities. Making the connection of unauthorized entry into the closed area of the monuments and FS management adversely affecting large watersheds does not seem connected. In any case we would tend to disagree that FS management leads to unauthorized access. It is inaccurate to connect FS management to illegal trespass on the monument when we neither condone nor accept this illegal activity. It is acknowledged that all of these activities occur, it is the wording and implication that is difficult for us to accept. Please, rewrite this paragraph in its entirety and eliminate the connection of FS management and adverse watershed condition.

P110 Park Under the Affected Environment for Park Neighbors... You mention that *“hiking, hunting, woodcutting, climbing, mountain biking, horseback riding and shooting activities within the area are for the most part not regulated and often result in physical intrusion onto the Monument”* I do not agree with the statement, “FS lands are unregulated” We have adequate regulations. These regulations govern when these activities become unacceptable. The mere fact that we allow these activities does not mean they are unregulated.

P153 Under the Heading Effects of No Action Alternative (to Long Term Integrity of Natural Systems and Processes) - I agree with your emphasis on the control of noxious weeds. I request that my staff and yours continue these efforts and consider noxious weed control as a topic for the revised MOU.

P192 – You mention spring flows at three springs and state that NPS is *“participating in the local planning process for CNF to address land uses and vegetation conditions that may adversely affect spring flows”*. The concept of spring flows at Wupatki was not discussed earlier in the FLEA process and is not currently mentioned in the Proposed Action. My staff will need to assess whether or not this is outside the scope of the FLEA analysis, or if it should be a separate planning process. I look forward to more discussion between our staffs’ related to this topic.

SUNSET CRATER VOLCANO

Major points

In the Preferred Alternative 1 description you state “NPS and FS would jointly construct and operate a new VC near the intersection of FR545 and 89. Before the specific location is determined additional environmental analysis and coordination with the FS would be necessary. The new VC would provide visitor orientation for both park and forest visitors before they encounter sensitive resources. The existing housing and maintenance area would be retained; the maintenance area would be rehabilitated.” I agree with all of these concepts. Our staffs might consider language in the revised MOU that streamlines future planning for the Visitor Center location. Again please mention that a Special Use Permit from the FS is required.

Preferred Alternative 1 Boundaries – map – Our informal comments previously sent to you included a different boundary adjustment than the one shown for the preferred alternative. Please see the attached map for our current opinion about the Sunset Crater Volcano boundary. I do not agree with some of the boundary adjustments and I agree with others. My intent is that the Monument should include those major land features that are currently part way in and part way out of the Monument i.e. Lenox Crater and the un-named crater on the northeast corner of the Monument. My intent is also that boundary changes be considered that improve management efficiency. I have recently changed my position about the administrative site, which currently holds the Visitor Center, housing and maintenance area. Because the land is owned by the FS and administered by the NPS there has been confusion and time consuming waiting periods for completing NEPA decisions for even the smallest of activities. The administrative site changing to NPS ownership would achieve a more efficient use of our staff time. The boundary you propose is greater than what is necessary to improve management efficiency and I would appreciate your consideration of the attached map.

P37 Administrative Boundary Expansion (Alternative 1) you state that the expansion would also eliminate a number of forest roads that cross in and out of the monument boundaries and place them entirely within Forest Service ownership. The boundary expansion you propose places more, not less roads in the situation of crossing in and out of NPS boundaries. The FS would request administrative and in some cases public access on FR776, FR546 and the O’Leary Peak Road.

P42 Under the Heading Alternative 1 (Preferred) Key Actions – There is not a mention of the O’Leary Road. However, in one of the alternatives considered but eliminated from detailed study it is mentioned that the *O’Leary Road may be closed to motorized access and promoted as a hiking opportunity. Off-trail backcountry hiking would not be permitted.* I would like our staffs to consider this as an option for the preferred alternative. Please make a note that this change requires additional consultation with the Hopi and Navajo Tribes. Discussions should also include the concepts displayed in the FLEA proposed action of smaller loop trails at the base of O’Leary Peak adjacent to the O’Leary Group site (see FLEA Proposed Action p51). By providing other trails near the campground we may lessen the number of hikers on the road. Our staffs should work on clear direction related to how much ‘promotion’ of the trail occurs. In addition, I would also like both FLEA and the NPS GMPs to re-iterate that permits and existing

uses would be maintained on O’Leary Peak and that administrative use by FS and electronics site permittees are permissible uses.

P39 Under the Heading Actions *Common to All Alternatives C. Campground Expansion* – you state that the USFS has agreed that the campground will remain in its current location no longer than the life of this general management plan. Our position is that we will not make a decision today about the future of the Bonito Campground. Rather we leave that discussion and decision to future FS staff. Our actions neither set precedent for nor preclude this discussion in the future. There is not a pressing reason today for moving or closing the campground. Please remove this statement.

P.36 Under the Heading Boundary Expansion Criteria you state “*the ability of visitors to understand the full story of Sunset Crater is hampered because visitors are unable to access primary resources related to Park significance, particularly the fissure area and Gyp Crater to the southeast. Current OHV use in the Cinder Hills OHV area precludes park visitors from hiking in this area for safety reasons*”. I understand the conflicts that arise with having an OHV area within sight and sound of the Monument, and the associated visual and noise impacts and concerns that are accurately described here. However, the assertion that visitors are unable to access Gyp Crater and the fissure area is inaccurate. There are no restrictions to hiking, horse riding or driving a vehicle except for vehicle restrictions in Gyp Crater itself. Access, for the purpose of seeing these geologic features, is not restricted.

On P37 Under the Heading Boundary Expansion Criteria you state “*continued use the OHV area will contribute to this acceleration of erosion and damage to the geologic features on the Cinder cones*” This statement is correct to some extent, however, we are taking steps to more actively manage the OHV area to limit this occurrence. Per the FLEA PA we propose to implement actions in the area of the fissure with vehicle slope closures, designated trails ‘vehicle slow’ zones, and changes in camping. In addition, the Cinder Hills Implementation Schedule lists many of the specific actions that are not described in the FLEA PA. I encourage our staffs to continue to review and update the Implementation Schedule as needed and include specific items in the MOU update. FLEA also adds to Forest Plan language for the Cinder cones located outside of the OHV area, with an emphasis of maintaining un-tracked appearance and cinder-adapted species.

On P48 of the Sunset Crater DEIS Regional planning consideration, General Concept: This section states that “NPS has de facto management by virtue of proximity and presence” of the land located between Sunset Crater Volcano and Wupatki National Monuments. We do not agree. This is managed by the Forest Service. In addition, the Arizona Game and Fish Department manages the wildlife and surveys the area.

Minor editorial comments

P101 states that Land Management plans exist for some of the areas surrounding the monument. This is incorrect, as land management plans exist for ALL of the areas surrounding the monument.

Sincerely,



JIM GOLDEN
Forest Supervisor

cc:

Ronald Eberhart, National Park Service, Denver, Colorado
Ron Sieg, Game & Fish, Flagstaff

RESPONSE TO COMMENTS

- 2) Language has been changed
- 3) No action taken. General Management Plans locate facilities in areas and base effects on known information for those areas. More detailed studies and alternatives within areas are considered in future studies.
- 4) Language has been changed.
- 5) Language has been changed.
- 6) Language has been changed.
- 7) Language has been changed.
- 8) Language has been changed.
- 9) Language has been modified.
- 10) No action taken. General Management Plans locate facilities in general areas. More detailed studies will be considered in future plans. Alternatives within the area indicated will be considered and if needed, other areas will be considered. The need for a Special Use permit has not been determined at this time.
- 11) No action taken. Several of the Key Actions are interdependent. During implementation planning more detailed consideration will be given to gate locations.
- 12) Language has been modified
- 13) No action taken.

*REC V
10-26-01*



United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Wildlife Services

2224 W. Desert Cove Ave.
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(602) 870-2081

October 22, 2001

Sam Henderson
Superintendent
Flagstaff Area National Monuments
National Park Service
6400 N. Highway 89
Flagstaff, AZ 86004

Dear Mr. Henderson:

The US Department of Agriculture/Animal and Plant Health Inspection Service/Wildlife Services, Arizona Program recently received copies of draft "General Management Plans/Environmental Impact Statements for Sunset Crater Volcano, Walnut Canyon, and Wupatki National Monuments" created by the National Park Service (NPS). The Arizona Program is providing the following comments:

14

- The Flagstaff area monuments are in the heart of plague country. The plans did not address how the NPS would address an outbreak of plague for the protection of human health and safety and to protect native wildlife.
- The Flagstaff area monuments have had bat rabies documented on site. The monuments are also near the recent outbreak of bat rabies in skunks that occurred in Flagstaff this year. The plans do not address how the NPS would respond to additional rabies outbreaks for the protection on human health and safety and native wildlife.
- Reference is made to the potential impacts of feral cats and dogs. What options does the NPS intend to use to manage invasive vertebrate species including feral cats and dogs?
- In reference to threatened and sensitive species, the document relies heavily on continual monitoring of the listed species and closure of areas to protect threatened and sensitive species. What additional options does the NPS intend to use to maintain or increase threatened and sensitive species, especially vertebrate species?
- The Arizona Program would like to continue to be included on the NPS's mailing list for the aforementioned plans as well as for additional information sent out by the NPS.

If you have any questions pertaining to my response, then do not hesitate to contact me at Area Code (602) 870-2081.

Sincerely,

David Bergman
State Director



RESPONSE TO COMMENTS

14) Activities pertaining to National Park Service prevention of *Vector Borne and Zoonotic Disease* are beyond the scope of general management plans. We will continue our cooperative efforts with both the State of Arizona, Coconino County and the National Park Service Public Health Service in following the guidelines provided by National Park Service Reference Manual 83G (*Vector Borne and Zoonotic Disease*).

We have consulted with the United States Fish and Wildlife Service for any implementation actions that may affect species listed under the Endangered Species Act, and edited language throughout pertaining to threatened wildlife species management.

12/31/01 08:13 FAX 520 734 2331

Cultural Preserv

01

THE HOPI TRIBE



Wayne Taylor, Jr.
CHAIRMAN

Phillip R. Quochoytewa, Sr.
VICE-CHAIRMAN

December 28, 2001

Sam R. Henderson, Superintendent
Wupatki-Sunset Crater Volcano-Walnut Canyon National Monuments
6400 North Highway 89
Flagstaff, Arizona 86004

Dear Superintendent Henderson,

Thank you for your correspondence regarding the Flagstaff Areas National Monuments' enclosed draft General Management Plans/Environmental Impact Statements for Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments. The Hopi Tribe appreciates your continuing solicitation of our input and your efforts to address our concerns.

After centuries of migrations, our ancestors, *Hisatsinom*, People of Long Ago, left their ancient villages at Walnut Canyon, Wupatki, Elden Pueblo, and other sites around Flagstaff and throughout the Southwest, to complete their migrations by arriving at *Tuuwanasavi*, the Center of the Universe, in fulfillment of a covenant with *Ma'saw*, the Earth Guardian. The Hopi Tribe considers our ancestral villages at Walnut Canyon and Wupatki, referred to as archaeological sites, to be Hopi Traditional Cultural Places. Other Hopi Traditional Cultural Places associated with our ancestral and modern Villages include shrines, trails, rock markings, and traditional gathering places. Hopi people consider prehistoric archaeological sites and isolated occurrences to be the "footprints" of our ancestors, and we do not consider our ancestral sites to be "abandoned." Wupatki, Walnut Canyon, and Sunset Crater are Traditional Cultural Places of the Hopi Tribe. Therefore, the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric sites.

The Hopi Cultural Preservation Office has reviewed the draft General Management Plans/Environmental Impact Statement for Wupatki National Monument, and we offer the following questions and comments.

We appreciate the Park Mission purpose statement, "to preserve, protect, care for, and manage Hopi ancestral sites....," which is consistent with the enabling legislation for the Monument. We also appreciate the significance statement, "Historic material reveals a rich record of human endeavor left by Navajo families over a period of 150 years....," and the statement in the Outstanding Park Values and Resource Concerns section, "Wupatki is primarily

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Cultural Preserv

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December 28, 2001
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a place inhabited by people of the Ancestral Puebloan cultural tradition.”

We note that the Relations with Park Neighbors and Other Agencies section does not include the Hopi Tribe or Hopi Cultural Preservation Office, and that in the Ethnographic Resource section and throughout the documents general references are made to culturally affiliated tribes. How can the Flagstaff Areas accomplish its mission, “to preserve, protect, care for, and manage Hopi ancestral sites...” without the Hopi Tribe and the Hopi Cultural Preservation Office?

The Outstanding Park Values and Resource Concerns section states:

The archaeological sites that Wupatki National Monument was created to protect are considered to be the ancestral; homes of modern day Hopi, Zuni and other Puebloan people. Certain Navajo clans also claim affiliation to the prehistoric pueblo remains...

The Hopi Tribe does not dispute that certain Navajo clans claim association to prehistoric pueblo sites, landmarks or ruins. However, the Hopi Cultural Preservation Office has reiterated the position of the Hopi Tribe that geographical association to an area does not constitute cultural affiliation to human remains as defined by the Native American Graves Protection and Repatriation Act.

The Hopi Cultural Preservation Office generally supports Alternative 4 in the Wupatki draft Plan: Emphasize Integrated Story Between the Parks and Minimize Development, because this alternative “would have a major beneficial effect for most archaeological resources,” and

would provide a beneficial effect on tribal cultural values and would provide the greatest protection to ethnographic resources of all the proposed alternatives.

This alternative “would preserve and enhance the minimally altered prehistoric cultural landscape.”

However, we do not see the necessity of removing the existing visitor center and museum as proposed in Alternative 4. Perhaps removal of the visitor center/museum in this alternative is intended to enhance the preferred alternative, Alternative 3, which focuses on diversifying the range of visitor experiences.

The Hopi Cultural Preservation Office has reviewed the draft General Management Plans/Environmental Impact Statement for Walnut Canyon National Monument, and we offer the following questions and comments.

The archaeological sites in Walnut Canyon are Hopi ancestral sites. To the Hopi

Sam R. Henderson
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Page 3

people, Walnut Canyon, is *Wupatupqa*, Long Canyon, and is an ancestral home of the Bearstrap and Bluebird Clans. *Sawyava*, Bat Spring, is a Hopi Traditional Cultural Place.

15 In the Index, Hopi is listed on page 99, which contains a reference to Nava-Hopi Tours.

The Hopi Cultural Preservation Office generally supports Alternative 2 in the Walnut Canyon draft Plan: Emphasize Preservation. However, we do not see the necessity of a new visitor center as proposed in this alternative. Perhaps the new visitor center in this alternative is intended to enhance the preferred alternative, which is intended to emphasize preservation, in contrast to Alternative 2, which is intended to diversity opportunities for visitor use.

The Hopi Cultural Preservation Office has reviewed the draft General Management Plans/Environmental Impact Statement for Sunset Crater Volcano National Monument, and we offer the following questions and comments.

The Hopi Cultural Advisory Task Team has expressed concerns regarding the checkerboarding of the Cinder Hills for various commercial and recreational purposes, including mining and off road vehicle use. Sunset Crater and the Cinders Hills are a Hopi calendar and a Hopi Traditional Cultural Landscape. Sunset Crater and the Cinder Hills are the home of certain *katsinas*, and are central to numerous clan traditions. The *katsinas* return to the San Francisco Peaks after the Home Dance, *Nimankatsina*, through Bonito Park.

Page 1 states, "Wupatki is currently operating under a Master Plan approved in June 1982."

On page 28, please use paragraphs to separate the Hopi shrine and oral tradition references from "Several contemporary American Indian tribes..." and "The Navajos and Apaches..."

In the Index, Hopi is listed, "22, 28, 29, 36, 82, 84, 86, 99, 100, 101, 127, 185, 203, 204." We find no references to Hopi on pages 29, 82 (which is blank), 99, 100, 127, 185, 203, or 204. These references are apparently to Sunset Crater or American Indian tribes.

The Hopi Cultural Preservation Office generally supports Alternative 3, Expand Park Boundaries to Preserve Park Related Resources in the Sunset Crater draft Plan.

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We note that the Relations with Park Neighbors and Other Agencies sections in all three Plans do not include the Hopi Tribe or Hopi Cultural Preservation Office, and that in the Ethnographic Resources sections and throughout the documents, general references are made to culturally affiliated tribes.

How can the Flagstaff Areas accomplish its mission at Wupatki National Monument without the Hopi Tribe and the Hopi Cultural Preservation Office?

The Ethnographic Resources sections in all three Plans state a Desired Condition:

All agencies shall accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of these sacred sites.

16

Wupatki, Sunset Crater, and Walnut Canyon are traditional gathering places for certain Hopi Clans. This Desired Condition appears to us to be inconsistent with the Flagstaff Areas past position on Hopi traditional ceremonial use.

Although these Plans address the long term integrity of archaeological and ethnographic resources generally, they demonstrate that there is a continuing lack of recognition and integration by the Flagstaff Areas of specific contemporary Hopi traditional values that are ascribed to our ancestral sites at Wuptaki, Walnut Canyon, and Sunset Crater National Monuments.

The Flagstaff Areas' consultation in practice, as demonstrated by the Walnut Canyon new lands survey proposal, consists of notification. Therefore, the Hopi Cultural Preservation Office suggests that each of these Plans include development of Cooperative Agreements between the Flagstaff Areas and the Hopi Tribe. And therefore, the Hopi Cultural Preservation Office requests additional consultation on these Plans.

We reiterate our invitation to you and your staff to our January 23, 2002, administrative meetings, as stated in our letters dated December 12 and 26, 2001. At that time, we can address our comments on these General Management Plans, and the Walnut Canyon new lands survey and fuels reduction projects.

Respectfully

Lee Lomayestewa for
Leigh J. Kuwanwisiwma, Director
Cultural Preservation Office

xc: Office of the Chairman
Kurt Dongooske, Clay Hamilton, HCPO

RESPONSE TO COMMENTS

15) Reference has been deleted.

16) Tribal Consultation in preparation of the general management plan was extensive and is addressed in the section *Consultation and Coordination*. An additional heading has been added for clarification.



THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT

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Flagstaff Office, 3500 South Lake Mary Road, Flagstaff, AZ 86001-1043

January 29, 2002

Mr. Sam Henderson, Superintendent
Flagstaff Area National Monuments
National Park Service
6400 N. Highway 89
Flagstaff, Arizona 86004

Re: Draft General Management Plans/Environmental Impact Statements
Sunset Crater Volcano, Walnut Canyon and Wupatki National Monuments

Dear Sam:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the subject projects. It is obvious that production of these documents required an enormous amount of time and effort. We commend the National Park Service, and especially the Flagstaff Area National Monuments staff, on this endeavor.

We are pleased that the National Park Service is committed to cooperating with other state and federal agencies regarding resource management on lands adjacent to the monuments. We are also pleased that the management plan for Walnut Canyon National Monument and the Flagstaff Area Regional Land Use and Transportation Plan are in agreement with respect to expansion. Additional comments are provided in the attached documents, which are specific for each monument.

We look forward to working with you to finalize these documents and implement specific actions. If you have any questions or require additional information, please contact me at 774-5045.

Sincerely,

A handwritten signature in cursive script that reads "Debra C. Wright".

Debra C. Wright
Habitat Specialist

:dw

cc: Bob Barsch, Wildlife Manager
Carl Lutch, Wildlife Manager
Larry Phoenix, Sector Supervisor
Jim Golden, Supervisor, Coconino National Forest
Kath Farr, Coconino National Forest

Enclosures

COMMENTS TO THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
AND DRAFT GENERAL MANAGEMENT PLAN
WALNUT CANYON NATIONAL MONUMENT
Arizona Game and Fish Department
January 29, 2002

General The Department generally supports the selection of Alternative 2 for the management of Walnut Canyon National Monument, subject to the following comments:

Page 21 **Land Protection:** The Department supports the acquisition of the existing inholding within Walnut Canyon National Monument, subject to a willing property owner.

Page 33 17 **Resource Analysis, 2nd paragraph:** The subject of this paragraph should be Walnut Canyon, not Wupatki National Monument.

Page 34 18 **Management Zones:** The last sentence states that there are nine management zones applicable to Wupatki National Monument. However, there are only 7 management zones described. Again, the subject of the paragraph should be Walnut Canyon, not Wupatki.

Page 38 **Boundary Expansion Criteria:** The Department supports the position of not proposing a further expansion of the existing boundaries of Walnut Canyon National Monument. We also support the reevaluation criteria established to determine if a boundary expansion should be proposed in the future.

However, the Department continues to be concerned about proposals for boundary expansions through congressional action. We have stated during several meetings and in correspondence that we do not support expansion of National Monuments unless resource values can not be adequately managed by the adjacent land management agency (in this case, the U.S. Forest Service). We remain committed to this position.

A recent expansion proposal incorporates many sections of land managed by the U.S. Forest Service, based on watershed characteristics. Because this National Monument was established to protect substantial cultural resources in Walnut Canyon, we fail to understand the rationale for this expansion proposal. Unless significant cultural resources are located in the proposed expansion area, and those resources can not be adequately protected by the current land owner or management agency, we can not support this proposed boundary expansion.

Page 44 19 **Alternative 2 (Preferred): Key Actions:** This alternative calls for three gates on the entrance road. We question the need for three, as it appears that one placed near I-40 and one placed on the south side of the entrance road at FR 303 would prevent entry to the monument while allowing legal cross-travel on FR 303.

Page 49 **MITIGATING MEASURES:** The Department is supportive of all listed mitigating measures.

Page 86 20 **Park, 1st paragraph:** Great grey owls do not inhabit Arizona, however, great horned

20 owls are very common.

Page 87 **Park**, last paragraph: The Department notes that “the lands added by the 1996 boundary expansion have yet to be surveyed, fenced, and posted.” We strongly encourage the National Park Service accomplish these three tasks as soon as possible. The Department is disappointed that protection of the significant cultural resources within the 1996 boundary expansion area has not occurred.

Page 88 **Park**, last paragraph: We expect that while the City of Flagstaff might approve a construction project, it would actually be a developer that might eventually acquire and develop the adjacent lands managed by Coconino National Forest and Arizona State Land Department.

21

Page 95 **Park**, 1st column: This paragraph states that the former reservoir behind the Santa Fe Dam is almost entirely filled with sediment and that most of the local storm flows pass through the dam’s spillway. The Department is concerned about the effects of sediment deposition on downstream vegetation in Walnut Canyon which may exacerbate impacts resulting from changes in the natural hydrology.

22

In addition, we are concerned with the occurrence of noxious weeds behind the dam, which could migrate to the canyon bottom. The Department would encourage the National Park Service to initiate an aggressive program of noxious weed control and eradication.

Page 137 **Effects of the No-Action Alternative:** The Department strongly encourages the development of a new Fire Management Plan. We recommend that this information be included on page 39 under **Actions Common to All Alternatives**.

23

Page 140-141 & Page 159-160 **Effects of Alternative 1:** This alternative proposes to upgrade and extend an existing road for approximately 3 ¼ miles along the northeastern canyon rim. Improving this road and providing a scenic drive along the northeast canyon rim may increase visitation to this area, thus vehicle and human noise and disturbance to sensitive plant and wildlife species. This disturbance could affect all species on the canyon rim and within the canyon, not just solitary wildlife species (as stated in the EIS). It has also been shown that some wildlife species such as deer, avoid areas within ¼ mile on each side of the road. Therefore, the area of impact would be over ½ mile wide on the rim, along with the disturbance to wildlife in the canyon itself. In addition, this road would cross several tributary channels that drain into Walnut Canyon, possibly introducing additional sedimentation to the hydrology of the system (see last paragraph of this section). The Department does not believe that closing the monument at night would mitigate many of the potential impacts to wildlife as a result of this action. Therefore, we recommend that this 3¼ mile improved scenic drive not be developed if this alternative is chosen.

24

This section of the document also indicates that this proposed road would bisect one or more known wildlife movement corridors for elk and pronghorn between

25 Campbell and Anderson Mesas (page 30). While there may be some wildlife moving across the canyon (such as elk), we believe that most wildlife move east and west in the area between the monument and I-40.

26 This alternative also proposes to provide guided hikes to about ½ mile of the east canyon floor by scrambling down the steep canyon slopes. While the area of impact to the canyon bottom is relatively small, the Department is concerned that wildlife utilizing this narrow area will be negatively impacted by public recreation disturbance (see comments for page 143-144 & 160-161 below). Because wildlife may utilize Walnut Canyon year-round, the Department does not believe that closing the monument at night or closing the area during important breeding and/or migration seasons would mitigate the potential impact to wildlife as a result of guided hikes to the canyon floor. Therefore, we recommend additional mitigation measures be implemented if this alternative is chosen. We also recommend that specific mitigation measures be identified and analyzed subsequent to a formal decision on the General Management Plan or during the project-specific NEPA process. At that time, actions, methods, and timelines can be mutually developed

Page 143-144 & Page 160-161 **Effects of Alternative 2 (Preferred):** This alternative calls for improving approximately 1¼ miles of existing road to a staging area along the northeast canyon rim. While the wildlife impacts from this action would be similar to those discussed above (page 140-141 & 159-160), they would be of a lesser degree than those from Alternative 1. Wildlife would avoid areas within ¼ mile on each side of the road, and species on the canyon rim and within the canyon could be impacted, not just solitary wildlife species (as stated in the EIS).

27 Again, the Department does not believe that closing the monument at night would mitigate many of the potential impacts to wildlife as a result of this road upgrade. Therefore, we recommend that additional mitigation measures be implemented if this alternative is chosen. We also recommend that specific mitigation measures be identified and analyzed subsequent to a formal decision on the General Management Plan or during the project-specific NEPA process. At that time, actions, methods, and timelines can be mutually developed

This section of the document also indicates that this proposed road would bisect one or more known wildlife movement corridors for elk and pronghorn between Campbell and Anderson Mesas (page 30). While there may be some wildlife moving across the canyon (such as elk), we believe that most wildlife move east and west in the area between the monument and I-40.

This alternative also proposes to expand visitor use into the canyon through guided hikes along 2 miles of the canyon floor. The impacts from increasing the hiking distance from ½ mile (Alternative 1) to approximately 2 miles down the canyon will greatly increase the negative impacts from this Alternative. Species such as Mexican spotted owls, peregrine falcons, northern goshawks, bats, and other

27 raptors may utilize and/or nest in the canyon. In addition, bear, mountain lion, elk, mule deer, pronghorn, and turkey utilize Walnut Canyon for forage, water, cover, and as a movement corridor. Many of these species may use this area because it has been historically protected from human impacts and disturbance, other than occasional stabilization, monitoring, research or educational activities. Because wildlife may utilize Walnut Canyon year-round, the Department does not believe that closing the monument at night or closing the area during important breeding and/or migration seasons would mitigate the potential impact to wildlife as a result of additional disturbance along the canyon floor. Therefore, we recommend that public access to the canyon bottom not be expanded as described in Alternative 2.

Effects of Alternative 1: and Effects of Alternative 2 (Preferred): Both of these alternatives propose to expand visitor use into the canyon through guided hikes along the canyon floor. We are very concerned about potential impacts from recreation to the riparian vegetation and wildlife that utilize the canyon bottom (see above).

As previously stated, the Department is concerned that cattle grazing has been allowed to continue in 4 miles of the Walnut Canyon riparian corridor because of the lack of a fence. Some of the impacts to the riparian resources described in this document may be as a result of cattle grazing the canyon bottom, depending on the intensity and duration of the grazing activity. As stated above, we strongly encourage fencing the 1996 boundary as soon as possible to exclude livestock from the east canyon floor. However, we do not support reducing livestock impacts to the riparian vegetation in exchange for increasing the impacts from recreation. We also do not support relying on fencing the eastern park boundary (which should have been accomplished about 4-5 years ago as a matter of course) as mitigation for adverse impacts from recreational activities proposed under this management plan.

28 We are also concerned with encouraging recreation in the narrow bottom of Walnut Canyon because this activity could increase the potential for human/large predator interactions. These interactions may not be obvious to the recreationists or the park guides. However, repeated close proximity of the public to bears and mountain lions increase the chance of habituation by these species, leading to potential direct interactions with humans.

29 Another impact may be expected from dislodging soil and rocks while scrambling on the steep canyon slopes. This additional soil and rock material may damage or bury vegetation and increase sedimentation in the drainage. This may ultimately negatively impact the vegetation that is integral to the existing wildlife habitat in the canyon.

30 The Department does not agree that the potential cumulative adverse impacts to wildlife described above are minor. We also do not believe that the proposed mitigation actions are sufficient for this disturbance. Therefore, we request consideration of a combination of the two alternatives with appropriate mitigation (see above):

Comments to DEIS/General Management Plan
Walnut Canyon National Monument
Page 5

Arizona Game and Fish Department
January 29, 2002

30

Improve approximately 1¼ mile of the existing primitive road to the staging area as proposed in Alternative 2. Provide guided hikes from the staging area to within ½ mile of the canyon bottom (as proposed in Alternative 1), and return on the same trail. Develop a hardened trail along the rim and steep slopes to eliminate dislodging soil and rocks caused by scrambling.

Page 151

31

Effects of Alternative 1: The Department is concerned about the determination that Alternative 1 will effectively protect sensitive plant and animal species. As stated above, this alternative would allow for negative impacts to occur to riparian plants and sensitive plants and wildlife species as a result of the scenic drive and guided hikes to the canyon bottom. The Department does not agree that these impacts would be mitigated by closure of the monument at night or closing the area during sensitive species breeding seasons. In addition, prohibiting public access to the remaining area of the monument does not effectively preclude disturbances or mitigate for the negative impacts to wildlife, riparian vegetation, and other sensitive plants that occur in Walnut Canyon. The value of riparian resources is considered to be much higher than those of upland vegetation.

Page 151
&
Page 153

32

Effects of Alternative 1: and Effects of Alternative 2 (Preferred): These sections of the document discusses actions that would occur in the event of “unfavorable mountain lion behavior.” As you know, large predators such as mountain lions and bears utilize large areas of habitat. As such, the animals that utilize Walnut Canyon are probably not restricted to the canyon or the monument itself. The Department would very much like to cooperate with the National Park Service regarding management of wildlife that may move on and off the monument during their life cycle, including large predators. This cooperative effort would include a determination of the appropriate action, if any, in response to a human threat posed by a mountain lion or bear in the monument. We also request that the information in these two sections be modified to reflect this inter-agency cooperation.

RESPONSE TO COMMENTS

- 17) Language has been changed.
- 18) Language has been changed.
- 19) No action taken. Several of the Key Actions are interdependent. During implementation planning more detailed consideration will be given to gate locations.
- 20) Language has been corrected.
- 21) Language has been changed.
- 22) Clarification language added explaining why NPS is not overly concerned about downstream hydrologic impacts from Santa Fe Reservoir.

24, 25, 26, 28, 29, 30, 31, 32) We believe this set of comments regarding the impacts of Alternative 1 on general wildlife and sensitive species is substantive. Language has been corrected and revised to provide additional background information in the Affected Environment: Integrity of Natural Systems and Threatened, Endangered, and Sensitive Species sections. The Environmental Consequences of Alternative 1 for Integrity of Natural Systems and Threatened, Endangered, and Sensitive Species sections have also been edited to improve wildlife impact analysis and support our conclusions. As a result, impact levels for wildlife, including protected and sensitive wildlife species, have increased from minor to moderate. Other edits to ensure consistency with wildlife and sensitive species impact analysis include: Servicewide Laws and Policies- Species of Special Concern; Resources/Values at Stake in the Planning Process – Natural systems and Processes; Outstanding Park Values and Resource Concerns; Preferred Alternative Key Actions; Mitigating Measures; Table 2; and Table 3.

27, 28, 29, 30, 31, 32) We believe this set of comments regarding the impacts of Alternative 2 on general wildlife and sensitive species is substantive. Language has been corrected and revised to provide additional background information in the Affected Environment: Integrity of Natural Systems and Threatened, Endangered, and Sensitive Species sections. The Environmental Consequences of Alternative 2 for Integrity of Natural Systems and Threatened, Endangered, and Sensitive Species sections have also been edited to improve wildlife impact analysis and support our conclusions. As a result, impact levels for wildlife, including protected and sensitive wildlife species, have increased from negligible to minor. Other edits to ensure consistency with wildlife and sensitive species impact analysis include: Servicewide Laws and Policies- Species of Special Concern; Resources/Values at Stake in the Planning Process – Natural systems and Processes; Outstanding Park Values and Resource Concerns; Preferred Alternative Key Actions; Mitigating Measures; Table 2; and Table 3.

G R A N D C A N Y O N T R U S T



December 28, 2001

Sam Henderson
Superintendent
Flagstaff Area National Monuments
6400 N. Hwy 89
Flagstaff, AZ 80004

Dear Mr. Henderson,

Thank you for the opportunity to comment on the Draft Environmental Impact Statements/Draft General Management Plans for Wapatki, Sunset Crater Volcano and Walnut Canyon National Monuments (DEIS/GMP). The Grand Canyon Trust is dedicated to protecting and restoring the canyon country of the Colorado Plateau. We are ardent supporters of the mission of the National Park Service (NPS) and the preservation of the cultural and ecological resources of the Flagstaff Area National Monuments.

We are encouraged by your plans to seek boundary expansions for all three monuments, however the extent of these expansions does not insure that all resources of significance to the Monuments are protected. Many important cultural, biological and geological features lie just outside the current and proposed boundaries of the Monuments. The DEIS/GMP documents identify these resources, as well as reasons that they deserve the full protection of National Monument status, as follows:

- The vast majority of the 5,000 archeological sites of the Wapatki prehistoric settlement system lie in the area between Sunset Crater Volcano and Wapatki National Monuments and outside of their borders (WNM- DEIS/GMP, pg 30).
- 51,100 Acres of land adjacent to Wapatki contain significant environmental and cultural features important to the Wapatki story (WNM- DEIS/GMP, pg 39).
- The archeological and landscape resources outside of Wapatki N. M. are comparable in quality, density and diversity as those protected within the monument (WNM- DEIS/GMP, pg 39).
- The lands between Wapatki and Sunset Crater Volcano National Monuments are generally viewed by visitors as part of the Monuments and are a popular part of the public's experience and essential to the Monuments interpretive experience (WNM- DEIS/GMP, pg 43).
- Peshlaki, Heiser and Wapatki springs are dependent on a perched aquifer that underlies Forest Service lands between the Monuments. Land use and vegetation condition are thought to be factors that affect spring flows and are described as "perhaps the most severely impacted resources within the monument (Wapatki)". (WNM- DEIS/GMP, pgs 43, 105).

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1



- New information since the creation of Sunset Crater Volcano N.M. has revealed that features (Kana-A lava flow and evidences of the fissure system that produced Sunset Crater) that are important to the overall geological history of the area lie outside of the National Monument (SCVNM- DEIS/GMP, pg 35).
- Grasslands, which are important habitat to pronghorn, burrowing owls, prairie dogs, ferruginous hawks, golden eagles and other species of concern, are abundant in this region, but have little protection from the impacts of development and land use activities¹ (WNM-DEIS/GMP, pgs 101).

Alternatives that would have expanded the boundaries to include protections for these resources were rejected for analysis. Justification for not conducting this analysis was based on the premise that cooperative planning with the Forest Service (USFS) could serve this purpose without an administrative land exchange. Closer examination reveals, however, that this premise may be flawed.

Despite their undoubtedly good intentions, we are concerned that Forest Service's multiple use goals may not accommodate the Park Service's preservation goals for those resources important to the integrity of the Monuments, but located outside current boundaries. Budgetary constraints and political pressures can be expected to continue to drive management priorities, and without the higher standard of protection provided by National Monument status, these important resources may not be afforded the long-term protections from recreation, grazing, and other uses necessary to fulfill NPS preservation goals under USFS administration.

Additionally, our review of the Coconino National Forest's Flagstaff/Lake Mary Ecosystem Analysis Proposed Action (FLEA) reveals little USFS commitment toward the management of the lands surrounding the Flagstaff Area National Monuments for the expressed purpose of protecting the Monuments themselves. The elimination of multiple uses and roads, two key outcomes of cooperative regional planning described in the 1998 newsletter (NPS 1998, pg 15), are not included in the proposed action. Other than measures to more intensively manage the Cinder Hills OHV area, FLEA makes no binding commitments of the USFS and makes little mention of issues raised in any of the DEIS/GMP documents. It proposes "no additional goals or objectives for coordination with the NPS", other than updating the current MOU with items such as boundary management, fire management, interpretation and law enforcement (FLEA, pg 38). There is no mention in FLEA of a special management designation for these lands or restrictions on extractive uses of them, as would be necessary to guarantee the necessary protections under USFS administration. Also, what specific commitment that the NPS seeks from the USFS to insure that these resources are protected is not described in your analyses'.

It is imperative that a full analysis of these and any other issues associated with a boundary expansion that includes the entire area between Wapatki and Sunset Crater Volcano National Monuments (area of regional planning considerations) be conducted. We feel that your analysis is incomplete without doing so.

¹ The 1999 Arizona GAP Analysis reveals that less than 5% of plains grassland is protected in the Greater Grand Canyon region.

33

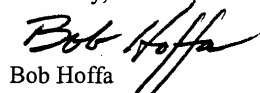
In addition, we suggest a special land use designation that strongly curtails multiple-use needs to be created in partnership with the USFS to protect Walnut Canyon National Monument from the impacts of adjacent land use activities. Protecting the health of tributary drainages, wildlife movement corridors, controlling invasive species, and serving as a buffer from urban growth should be important management goals in this agreement. The level of commitment, on the part of each agency, to pursue a detailed management agreement should be explicitly defined in both the EIS/GMP's and FLEA.

Continued impacts to lands surrounding the Monuments will jeopardize thousands of archeological resources; continue to degrade the fragile cinder hills and other features important to the geological story of the Sunset Crater eruption; threaten a critical watershed that feeds springs within Wapatki N.M.; and degrade ecologically sensitive habitats of Walnut Canyon. These fragile cultural resources and important biological features deserve the full protection that National Monument status offers.

We urge you to reconsider your decision to rely solely upon the existing MOU and to conduct a full analysis of a much larger boundary expansion. We further suggest seeking a comprehensive agreement with the USFS in which they commit to using all avenues at their disposal to ensure the protection of the Monuments, both within and outside of their boundaries. This is critical for long-term integrity of the Flagstaff Area National Monuments.

We appreciate your time and consideration. If you would like to discuss these comments, please feel free to contact me at your convenience.

Sincerely,


Bob Hoffa
Greater Grand Canyon
Program Associate

cc: Debbie Kill, Coconino National Forest

Documents Referenced

(FLEA) USDA Forest Service. September 2001. *Proposed Action to Amend the Coconino Forest Plan: Flagstaff/Lake Mary Ecosystem Analysis, Coconino National Forest.*

(SCVNM-DEIS/GMP). USDI National Park Service. September 2001. *Draft Environmental Impact Statement/Draft General Management Plan: Sunset Crater Volcano National Monument.*

(NPS) USDI National Park Service. November 1998. *Walnut Canyon, Sunset Crater Volcano, Wapatki National Monuments: General Management Plans Newsletter #3.*

(WCNM-DEIS/GMP) USDI National Park Service. September 2001. *Draft Environmental Impact Statement/Draft General Management Plan: Walnut Canyon National Monument.*

(WNM-DEIS/GMP). USDI National Park Service. September 2001. *Draft Environmental Impact Statement/Draft General Management Plan: Wapatki National Monument.*

RESPONSE TO COMMENTS

33) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.



Superintendent
Flagstaff Area National Monuments
6400 N. Hwy 89
Flagstaff, AZ

December 28, 1001

Dear Superintendent,

The Arizona Wilderness Coalition believes that the first Mission Goal stated in the Wupatki Draft EIS (page 4), that the "[n]atural and cultural resources and associated values within the three Flagstaff Area monuments are protected...within their broader ecosystem and cultural contexts" provides the fundamental purpose of NPS management. With this imperative in mind, we urge the Park Service to revisit the wilderness suitability of each monument.

The 1971 Wilderness Recommendation for Wupatki erroneously concluded that

[l]ands in Wupatki were unsuitable [for wilderness] due to the existence of livestock grazing throughout the monument, and also to the fact that the monument is essentially an area of prehistoric ruins and relics, with basically different purposes, uses, and management concepts from those of wilderness.

It is not clear from reading the Draft EIS whether or not grazing is still conducted in the Monuments. In any event, the National Park Service Reference Manual RM-41: Wilderness Preservation and Management, Section 6.4.6, states

[c]ommercial grazing or driving of livestock in park wilderness will be allowed only as specifically authorized by Congress. Where these activities are authorized, they will be managed under conditions and requirements identified with the approved wilderness management plans.

Nowhere does NPS policy (or the Wilderness Act) preclude wilderness designation in NPS units because of grazing.

Wilderness designation would provide substantial long-term protection of the "[n]atural and cultural resources and associated values within the three Flagstaff Area monuments...." As pointed out in Director's Order #41, Section 4,

[i]t is important to recognize that laws, such as the National Protection Act (ARPA), American Indian Religious Freedom Act (AIRFA) and the Native American Graves Protection and Repatriation act (NAGPRA), as well as others, intended to preserve our cultural heritage, are applicable in wilderness.

34

Given the inadequacy of the original wilderness recommendation, the Arizona Wilderness Coalition urges the National Park Service to revisit the wilderness suitability issue for the Flagstaff monuments. This analysis should be conducted in coordination with other agencies, particularly the Forest Service, within an ecosystem approach to conservation as recommended in Section 3 of Director's Order #41.

Thank you for the opportunity to comment.



Kim Crumbo, Northern Representative
Arizona Wilderness Coalition
P.O. Box 1033
Grand Canyon, AZ 86023

RESPONSE TO COMMENTS

34) A wilderness study is beyond the scope of the general management plan.

ARIZONA ETHNOBOTANICAL RESEARCH ASSOCIATION
107 NORTH SAN FRANCISCO STREET, SUITE 1
FLAGSTAFF, ARIZONA 86001
PH: (520) 774-2884

5 January 1998

Flagstaff Areas Planning Team
National Park Service
Denver Service Center, LA, Urbanowski
P.O.Box 25287
Denver, CO 80225-9901

To Whom It May Concern:

This letter is to comment on the GMP for Walnut Canyon, Sunset Crater Volcano, and Wupatki National Monument in Flagstaff, Arizona. We would like to applaud Sam Henderson for his exceptional work over the years as the Superintendent of the three parks. His continuous effort to involve the lay and scientific communities ... the activities concerning the three monuments has been outstanding. 37

We appreciate the opportunity to participate in the General Management Planning process. We will not address each alternative individually as on the comment sheets but will highlight our main concerns regarding the concepts and specific activities of each park.

WALNUT CANYON--We support parts of alternative #2 for this park because it emphasizes preservation and maintaining a pristine environment for wildlife and cultural sites. However, our main concern is that the proposed rim drive along Walnut Canyon. This proposal is absurd, especially because of the unique environment provided to wildlife here. The Arizona Game and Fish Department has commented on this unique environment that still supports bear, mountain lions, peregrine falcons, bald eagles, and goshawks.

35 Although this issue is not addressed, there should be an open policy for Navajo and Hopi people to pick pinyons and in addition, a parking area should be available.

SUNSET CRATER--We support parts of alternative #1 for this park: keeping the existing roads, walking trails, keeping the existing campgrounds, night road access, boundary expansion, and a new visitor center on Highway 89. The concept of alternative #1, to encourage motorized sightseeing between Wupatki and Sunset Crater, is definitely preferred over alternative #2. Access from both entrances should remain because makes a lovely sightseeing experience for tourists with little time. However, our main concern for this monument is that no new trails become established around Bonito Park because this area is extremely sacred to the Hopi people.

36 Although gathering of traditional medicinal plants is not mentioned in this General Management Plan, we highly recommend that the NPS keep the open policy for traditional Native American elders to pick their medicines.

WUPATKI--As combined presently, we do not support either alternative at this park. We do support the concept to emphasize motorized sightseeing because the loop road from Wupatki to Sunset Crater provides an excellent opportunity for tourists to explore this area. However, our two main concerns are access to Crack-In-Rock and closure of the loop road (one-way or completely). Crack-In-Rock is presently visited by lottery and guided NPS tours and should remain so. We also recommend more sensory detective devices around the more sensitive sites. We recommend that the road remain as it is because it is a favorite biking and driving road for Flagstaff residents.

Although it is not addressed on any of the alternatives, we strongly advise the National Park Service to allow Native Americans to have vender stands near or on the monuments. This gives the people a chance to feel pride in the monument and to feel like it belongs to them and it gives them an outlet for extra income. There is a model for this that is being implemented now by Native American for community action in Flagstaff where vendors are allowed through a lottery to sell at the Oak Creek Canyon Overlook.

37 We also advise that three additional full-time (preferably Native American) interpretive staff for each monument instead of new construction at the monuments.

Thank you,

Phyllis Hogan, Executive Director
Kristin Huisinga, Intern



cc: Sam Henderson
Helen Farley
Steve Mitchelson

RESPONSE TO COMMENTS

35) No action required. No change regarding this policy is proposed.

36) The National Park Service is mindful and supportive of the goals of the Public Law 95-341, the American Indian Religious Freedom Act, August 11, 1978 and Executive Order 13007, Indian Sacred Sites, May 24, 1996. Those goals are accomplished within the framework of the National Park Service's existing legal authority.

37) Specific staffing recommendations are beyond the scope of this general management plan.

1/07-202 7:32PM

FROM NPCA SW 5052471222

P. 1

NATIONAL PARKS CONSERVATION ASSOCIATION

Protecting Parks for Future Generations

January 7, 2002

VIA FACSIMILE 928-526-4259

Superintendent
Flagstaff Area National Monuments
6400 N. Hwy 89
Flagstaff, AZ 86004

RE: Comments on Draft EIS and GMP for Walnut Canyon National Monument

Dear Superintendent Henderson:

The National Parks Conservation Association (NPCA) appreciates the opportunity to comment on the Draft Environmental Impact Statement (DEIS) and General Management Plan (GMP) for Walnut Canyon National Monument. NPCA is America's only private, nonprofit citizen organization dedicated solely to protecting, preserving, and enhancing the U.S. National Park System. NPCA was founded in 1919 and today has over 400,000 members, including approximately 10,000 members in Arizona.

Given recent personnel changes at NPCA's Southwest Regional Office, we are unable to provide a thorough review of the DEIS/GMP at this time. Consequently, the following comments focus on a single important opportunity missed in the document that we feel must be rectified in the Final EIS/GMP. (A more complete review of the plan and environmental documentation by this office will be the subject of a forthcoming letter.)

The Plan is Deficient in That it does Not Protect All Park-Related Resource Values

The DEIS/GMP (p. 38) states:

"A boundary expansion assessment determined that both natural and cultural resources that contribute to the purpose and significance of the monument still remain outside current monument boundaries. However, further expansion of existing boundaries at Walnut Canyon was not recommended at this time, because any further expansion efforts would unreasonably complicate the management and land use planning on adjoining lands, administered by other agencies."

The text goes on to summarize the various land use planning efforts underway by the Coconino National Forest, Coconino County and the City of Flagstaff, and a possible state-wide ballot initiative to preserve important State Lands—including those adjacent to the monument known to contain monument-related resources. As a result of these efforts, the DEIS/GMP indicates the Park Service's reluctance to address alternatives that include any type of boundary expansion proposal, stating such a subject only will be reconsidered in the future if circumstances change for the worse. Specifically, the DEIS/GMP (p. 38) states:

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southwest@npca.org • www.npca.org



NATIONAL OFFICE
1300 19th Street, N.W. • Washington, D.C. 20036
(202) 223-NPCA(6722) • Fax (202) 659-0650
npca@npca.org • www.npca.org

♻️
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1-07-202 7:33PM

FROM NPCA SW 6052471222

P. 2

Superintendent Henderson
January 7, 2002
Page Two

“...should there be a degradation of lands adjacent to and which contain resources that contribute to the significance of Walnut Canyon, the subject of a boundary expansion will be reconsidered.”

NPCA finds the rationale for excluding a boundary expansion assessment in the DEIS/GMP wholly inadequate. Moreover, this “wait-and-see” approach runs counter to sound planning principles and renders the Park Service virtually without recourse in its ability to truly protect park-related resources. Unfortunately, the agency cannot and must not rely solely on the good will of other agencies in protecting resources that are directly relevant to the purpose and significance of Walnut Canyon. Particularly when these agencies have yet to put forward substantive plans outlining how they might do so.

The DEIS/GMP fails to take proactive steps to protect resources known to contribute to the significance of Walnut Canyon. The failure of the current document to consider a boundary expansion leaves open the possibility that these resources could be irreparably damaged before the Park Service is able to take any action related to their protection through a boundary expansion. Under the current DEIS/GMP scenario, full development of adjacent lands (particularly state lands) could well occur prior to any completion of a revived boundary expansion study by the Park Service.

Furthermore, the premise in the DEIS/GMP that current efforts by other agencies and citizens might serve to protect monument-related resources on nearby lands is unsubstantiated. To the contrary, the document must assume that these planning efforts may fail to adequately protect these lands and offer a fallback plan from which to ensure their protection. Consistent with Public Law 95-42, perhaps not all elements of a boundary expansion proposal need to be employed if these other entities ultimately protect these lands in perpetuity. But as it stands now there is no overarching plan to serve as a blueprint for the monument's protection. And that responsibility rests with the Park Service, who should take the lead in these planning efforts—and should not wait until irreversible decisions or changes are made by these other entities.

Case in point: in November, 2000, Arizona voters defeated the Arizona Preserve Initiative (a.k.a. Proposition 100) referred to in the DEIS/GMP. More recently, since the publication of the DEIS/GMP a decision was made by the coalition of groups responsible for the 2002 initiative not to pursue the issue for the Arizona ballot in 2002. Thus, a similar initiative would not be put before voters until November 2004 at the earliest. Furthermore, there is no certainty it would pass or that critical lands adjacent to Walnut Canyon would be included in any revision. In the meantime, these state lands would be subject to pressure for development and there would be no remedies available to protect

1-07-2002 7:34PM

FROM NPCA SW 5052471222

P. 3

Superintendent Henderson
January 7, 2002
Page Three

these lands in the absence of negotiations borne from an EIS/GMP that recommended their addition to the monument. Therefore, it is completely unrealistic to rely on a citizens' ballot initiative to adequately protect state lands that contain important resources related to the purpose and significance of the monument.

38

NPCA requests that the Park Service include alternatives in the EIS/GMP that consider a boundary expansion that fully protects adjacent lands known to contain natural and cultural resources related the purpose and significance of Walnut Canyon National Monument. In addition, NPCA recommends the Park Service include a boundary expansion proposal that protects such critical lands as its Preferred Alternative. Anything less appears to run counter to the Park Service's mandate under the National Parks and Recreation Act (16 USC 1a-5 et seq.).

A boundary expansion proposal currently supported by the Friends of Walnut Canyon and NPCA would add approximately 20,000 acres to the monument and would be sufficient to protect monument-related resources in perpetuity. Indeed, the DEIS/GMP states on page 39 that:

"... an effort is being undertaken by the National Parks (and) Conservation Association and the Friends of Walnut Canyon to seek a boundary expansion of the park through congressional action. ... The boundary expansion proposed by these organizations would certainly ensure the protection of significant resources that exist between the city of Flagstaff's Urban Growth Boundary and Walnut Canyon proper."

Which leads the reader of the DEIS/GMP to the obvious question: "Why, then, doesn't the Park Service consider such a boundary expansion proposal as part of the current planning process?" Considering what is at stake, NPCA believes the Park Service is obligated to take on this extremely important resource protection issue at this time.

Furthermore, there is good reason to believe that such an expansion would garner the approval of the City of Flagstaff and Coconino County, given its potential to substantially increase tourism to the monument, and thus increase tax revenues from visitor spending, and the Flagstaff area. This increased visitor spending would likely occur as a result of increased recreational opportunities (hiking, camping, increased ranger-led tours, etc.) and longer overall visits associated with an expanded monument.

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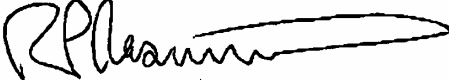
FROM NPCA SW 5052471222

P. 4

Superintendent Henderson
January 7, 2002
Page Four

NPCA appreciates the engagement of the public by the National Park Service in this planning effort and looks forward to working with the affected agencies and other members of the interested public to better protect and enhance this national treasure.

Sincerely,



Randall Rasmussen
Program Manager

NPCA—Protecting Parks for Future Generations
A library of national park information, including fact sheets, congressional testimony, position statements, and press releases, can be found on NPCA's Web site at www.eparks.org/media_center.

RESPONSE TO COMMENTS

38) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.



City of Flagstaff

December 31, 2001

Mr. Sam Henderson, Superintendent
Flagstaff Area National Monuments
6400 North Highway 89
Flagstaff, AZ 86004

Re: General Management Plan/EIS for Walnut Canyon National Monument

Dear Sam:

Thank you for the opportunity to evaluate the draft General Management Plan and Environmental Impact Statements for the three national monuments within the Flagstaff region. Because of its close proximity to the city and potential impact on the development of the city, of primary concern to the Planning Division of the City of Flagstaff is the draft General Plan for Walnut Canyon National Monument. We offer the following comments for your consideration.

As you are aware, and make reference to in the GMP, the city has been in the process of updating its general plan. The Flagstaff Area Regional Land Use and Transportation Plan (Regional Plan) has now received City Council approval and will be presented to the voters for their ratification of the plan in May 2002. The Regional Plan which covers an area of 525 square miles and includes not only the city of Flagstaff, but the outlying communities and areas was developed in conjunction with Coconino County.

A matter of considerable deliberation was the development, in the future, of lands which are located within the city limits northwest of the Monument. The potential impact on the Monument was evaluated taking into account numerous factors, with specific reliance on the *Greater Flagstaff Area Open Spaces and Greenways Plan* of 1998. Given that the *OS&GW Plan* designated lands for high priority for retention as open space in the region, it provided the city and county a green line which could be used, and was used in the Regional Plan, to designate areas suitable for development through growth boundaries. The areas outside of the growth boundaries, which are the high retention open space priority areas, were considered best suited for non-development purposes and designated Public Multiple-Use.

These intervening lands that lie between the current Monument boundaries and the existing or future development of lands within the city and that were a matter of debate throughout the regional planning process have led the city to develop a number of protective actions. The city, through the Regional Plan, is proposing to protect these



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Mr. Sam Henderson, Superintendent
Flagstaff Area National Monuments
General Management Plan/EIS for Walnut Canyon National Monument
December 31, 2001
Page two

lands through an Urban Growth Boundary, reduced densities, and transition buffers where development would abut public lands. It also calls for an intergovernmental agreement, as well as support for appropriate expansion of the Monument. At the time of the drafting of the Regional Plan, it was assumed that a Monument boundary expansion was likely but not imminent, consequently, the following was included in the Regional Plan:

"A monument expansion is again being proposed. Any future expansions would require the cooperative involvement of the National Park Service, the Forest Service, the State Land Department, the city and county, with a comprehensive public outreach effort to determine local level of support. Public concerns about continued access and recreation have been raised in the past and they would have to be adequately addressed when considering a monument expansion. With the proposed Urban Growth Boundary of the Regional Plan, future development would not extend into any recent and past-proposed expansion boundaries.

In the meantime, it is proposed to protect natural and cultural resources around the monument by simultaneously pursuing appropriate expansion of Walnut Canyon National Monument and undertaking measures to formalize inter-reliant commitments by the various federal, state and local governmental entities. The city and county commit to providing the Forest Service with the support it needs to manage the intervening lands between the monument and the Urban Growth Boundary in a manner that protects and mitigates impacts on the natural and cultural resources. To formalize each entity's commitment, the objectives and intent are to:

- Pursue an enter into an Intergovernment Agreement with the various land managers to identify and confirm the issues and commit to addressing them in order to protect the natural and cultural resources in the urban interface area.
- Support Forest Service efforts to manage the urban interface to mitigate future potential external threats to monument resources through its FLEA process and amendment to the Forest Plan. {The lands are being considered for recreation use with restricted motorized use.}
- Designate and require access points from developed or to be developed areas onto public lands.
- Provide a transition zone of open space or low density from higher density development where adjacent to public lands.
- Support the National Park Service in its efforts to monitor the use of and impacts on the natural and cultural resources.
- Pursue Arizona Preserve Initiative re-designation of state trust lands as suitable for conservation purposes."

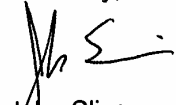
Mr. Sam Henderson, Superintendent
Flagstaff Area National Monuments
General Management Plan/EIS for Walnut Canyon National Monument
December 31, 2001
Page three

39

The draft GMP states that "...further expansion of existing boundaries at Walnut Canyon was not recommended at this time, because any further expansion efforts would unreasonably complicate the management and land use planning on adjoining lands, administered by other agencies." Given that there is an effort underway to consider expansion of the Monument and that the proposed boundaries will most likely involve some of the Public Multiple-Use Forest Service and State Trust lands within the city limits, the draft GMP should be revised to reflect current events and undertakings. In addition, the city respectfully requests consideration for inclusion, in part or whole, in the draft GMP the above commitments contained in the Regional Plan. There are many issues that are raised when considering a monument expansion that the draft GMP apparently does not address. Some of these issues relate to access from developed, or to-be-developed, areas to public lands; and the effect of the use of these lands for recreation purposes. It is assumed that even with a Monument boundary expansion there would still remain Forest Service lands surrounding the expanded Monument that could still be a matter of an Intergovernmental Agreement as proposed above.

Again, thank you for taking our concerns and requests for changes to the draft GMP into consideration. Please feel free to contact us at any time for further discussion.

Sincerely,



John Sliva
Planning Director

C: Mayor
City Council
D. Wilcox, City Manager
J. Dustir, Deputy City Manager
J. Wine, Deputy City Manager
S. Lere, Community Development Director
U. Montaña, Principal Planner
B. Towler, Coconino County
J. Golden, Coconino National Forest
A. Hendricks, Arizona State Land Department
D. Wright, Arizona Game & Fish Department

RESPONSE TO COMMENTS

39) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.

***Friends of Walnut Canyon
P.O. Box 835
Flagstaff, AZ 86002-0835***

December 31, 2001

Superintendent Sam Henderson
6400 N. Hwy 89
Flagstaff, AZ 86004

Dear Superintendent Henderson:

The Friends of Walnut Canyon would like to comment on your Draft General Management Plan for Walnut Canyon National Monument.

In general we support Alternative 2, Emphasize Preservation for the lands currently in the Monument. We question, however, how you expect to locate a Visitor's Center and Administrative Offices along the entrance road when you do not have undisputed title to that land.

We feel strongly that all of the Proposed Alternatives lack an important concept – the necessary expansion of Walnut Canyon National Monument. We would like to be so bold as to propose that not only should the Monument be expanded, but it be redesignated as a National Park and Preserve.

Since this document was conceived, both the City of Flagstaff and the County of Coconino have endorsed the concept of the expansion of Walnut Canyon National Monument in their Regional Land Use and Transportation Plan.

Expansion of the Monument has also been endorsed by the Plateau Group of the Sierra Club, the Northern AZ Audubon Society, the Hopi Tribe, and the National Parks Conservation Association.

On page 38 of your draft EIS you state that three circumstances would "require" the National Park Service to reconsider the boundary expansion needs of Walnut Canyon. As you know, all three of these have occurred.

- ❖ 1. The Forest Service has indicated that it would trade the lands adjacent to Walnut Canyon NM if either the State Lands were developed or the existing private lands were developed too densely for their liking.
- ❖ 2. The City has chosen to develop the lands within the Urban Growth Boundary at an unacceptable level.
- ❖ 3. At least one of the State Trust sections appears to be in imminent danger of development.

On page 38 you also state that "a boundary expansion assessment determined that both natural and cultural resources that contribute to the purpose and significance of the monument still remain outside the current monument boundaries." You further state that expansion "would unreasonably complicate the management and land use planning" of the adjacent agencies.

40

We argue now that the best way to uncomplicated things would be to include all of those lands into the Walnut Canyon National Park.

We urge that whichever Alternative you choose include significant expansion of the Monument Boundaries.

Once the expansion is achieved, then much of the new lands should be managed in a fashion more similar to Alternative 1, which allows for more diversity of opportunity for visitor use. Hiking, horseback riding and bicycling should be allowed on designated trails especially to the north of the canyon and west of the existing monument. If hunting is to be allowed at all, it should be restricted to an area well south of the canyon.

I hope that you will make these changes to your General Management Plan.

Sincerely,

Betsy McKellar

Betsy McKellar
Project Co-coordinator, Friends of Walnut Canyon

attached:

Letter of endorsement from Hopi tribe
Letter from the Plateau Group of the Sierra Club

RESPONSE TO COMMENTS

40) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.



Superintendent Sam Henderson
6400 N. Hwy 89
Flagstaff, AZ 86004

January 2, 2002

RE: Walnut Canyon

To Superintendent Henderson:

The Plateau Group of the Sierra Club, a group with over 600 members in northern Arizona, would like to go on record in support of the largest possible expansion of the Walnut Canyon National Monument.

41

We recognize that the Walnut Canyon area is the home of the Mexican Spotted Owl and the Peregrine Falcon as well as many species considered "wilderness species" such as mountain lions and black bears. We feel that National Park Service management will provide the most secure environment for these species. We also feel that the National Park Service offers much better long-term protection to the entire ecosystem of Walnut Canyon with its policy of no consumptive uses such as logging and hunting.

At this point, the City of Flagstaff and Coconino County have approved expansion in their Regional Plan, but have not yet agreed on boundaries. Additionally, the Sierra Club, Audubon, National Parks Conservation Association, and the Hopi Tribe have endorsed expansion. There is clearly a groundswell of public support and we hope that all the involved parties will cooperate in making the expansion process will proceed as smoothly and quickly as possible.

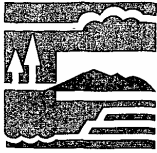
Sincerely,

Roxane George, Co-Chair
And members of the Plateau Group Executive Committee
David Sherman
Brian Nowicki
Donna Cassano
Patrick Grant



RESPONSE TO COMMENTS

41) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.



COCONINO COUNTY ARIZONA
BOARD OF SUPERVISORS

December 26, 2001

Paul J. Babbitt, Jr.
District 1

Elizabeth C. Archuleta
District 2

Matt Ryan
District 3

Deb Hill
District 4

Louise Yellowman
District 5

Mr. Sam Henderson
Superintendent
Flagstaff Area Monuments
6400 N. Highway 89, North
Flagstaff, AZ 86004

Dear Mr. Henderson,

Thank you for the opportunity to comment on the Draft for the General Management Plan for Walnut Canyon National Monument.

42

As you are aware, Coconino County and the City of Flagstaff just recently adopted the Flagstaff Area Regional Land Use and Transportation Plan. Within that document is the following: "It is proposed to protect natural and cultural resources around the Monument by simultaneously pursuing appropriate expansion of Walnut Canyon National Monument and undertaking measures to formalize inter-reliant commitments by the various federal, state and local government entities."

The above excerpt from the Plan reduces to writing the desire of the Board of Supervisors to explore and move forward with the expansion plans for the Monument. We feel this expansion will preserve and protect the natural and cultural areas of Walnut Canyon, as well as further the economic vitality and welfare of the greater Flagstaff community.

Your consideration of our comments is greatly appreciated. If you have questions, please call. My direct phone number is 779-6697.

Sincerely,

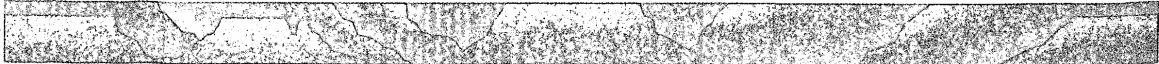
Paul Babbitt, Chairman
Board of Supervisors

Cc: Board of Supervisors
Friends of Walnut Canyon

RESPONSE TO COMMENTS

42) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.

G R A N D C A N Y O N T R U S T



Sam Henderson
 Superintendent
 Flagstaff Area National Monuments
 6400 N. Hwy. 89
 Flagstaff, AZ 80004

January 7, 2001

Dear Mr. Henderson,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement/Draft General Management Plan (DEIS/GMP) for Walnut Canyon National Monument. After further review, Grand Canyon Trust would like to offer these additional comments in support of Monument expansion.

The current boundaries of the Monument encompass only a small portion of the biological and ecological significance of the Walnut Canyon area. Lands adjacent to the Monument contain fragile and declining riparian habitat, extensive tributary drainages, important wildlife movement corridors, and habitat for threatened, sensitive, and special concern species. In addition, some prehistoric Sinagua cultural sites remain outside of the Monument boundaries.

The continued threat of urban growth has the potential to severely impact the overall integrity of the Monument and its cultural, biological and aesthetic qualities. Homes and businesses built right up to the current Monument boundaries will impair ecological integrity and consume lands needed to buffer the core of the Monument. Several blocks of Arizona State Trust Land north of the Monument are particularly vulnerable to development. If the State Lands were developed, fragments of National Forest Service (USFS) land would become isolated between the Monument and the urban edge of Flagstaff. This creates an undesirable management scenario for the USFS, and the possibility that they would trade off these remaining buffer lands to private interests.


The urban planning mechanisms of the City of Flagstaff and Coconino County can provide some level of protection for these lands. However, they cannot guarantee that future generations of City and County administrators will not overturn decisions to curtail growth in proximity to the Monument. Additionally, The USFS cannot offer the level of protection needed in this case without a special land use designation. Judging by their recent Proposed Action to amend the Coconino National Forest Plan (FLEA), the USFS is not interested in pursuing this option. <http://www4.nau.edu/finaid/Employment/OnCampus/fwsfs.asp>

43

The ever-increasing rate of population growth and development in Flagstaff is certain to continue, and the only mechanism for permanent protection for all of the lands needed to preserve the integrity of Walnut Canyon National Monument is boundary expansion. If we wait 10-15 years for the next GMP revision, it will be too late. We encourage you to actively seek boundary expansion through the DEIS/GMP planning process or through any other mechanism at your disposal.

Thank you for your consideration. Please feel free to contact me if you would like to discuss this matter.

Sincerely,


 Bob Hoffa
 Greater Grand Canyon
 Program Associate

"The Homestead," 2601 N. Fort Valley Rd., Flagstaff, Arizona 86001 (520) 774-7488 FAX (520) 774-7570
www.grandcanyontrust.org



RESPONSE TO COMMENTS

43) Language has been modified to reflect the proposed study that will be conducted which will address the need for expansion of park boundaries.

APPENDIXES/REFERENCES

APPENDIX A: LEGISLATION

SEC. 208. WALNUT CANYON NATIONAL MONUMENT BOUNDARY MODIFICATION.

(a) Purpose.--The purpose of this section is to modify the boundaries of the Walnut Canyon National Monument (hereafter in this section referred to as the "national monument") to improve management of the national monument and associated resources.

(b) Boundary Modification.--Effective on the date of enactment of this Act, the boundaries of the national monument shall be modified as depicted on the map entitled "Boundary Proposal--Walnut Canyon National Monument, Coconino County, Arizona", numbered 360/80,010, and dated September 1994. Such map shall be on file and available for public inspection in the offices of the Director of the National Park Service, Department of the Interior. The Secretary of the Interior, in consultation with the Secretary of Agriculture, is authorized to make technical and clerical corrections to such map.

(c) Acquisition and Transfer of Property.--The Secretary of the Interior is authorized to acquire lands and interest in lands within the national monument, by donation, purchase with donated or appropriated funds, or exchange. Federal property within the boundaries of the national monument (as modified by this section) is hereby transferred to the administrative jurisdiction of the Secretary of the Interior for management as part of the national monument. Federal property excluded from the monument pursuant to the boundary modification under subsection (b) is hereby transferred to the administrative jurisdiction of the Secretary of Agriculture to be managed as a part of the Coconino National Forest.

(d) Administration.--The Secretary of the Interior, acting through the Director of the National Park Service, shall manage the national monument in accordance with this title and the provisions of law generally applicable to units of the National Park Service, including "An Act to establish a National Park Service, and for other purposes" approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2-4).

(e) Authorization of Appropriations.--There are hereby authorized to be appropriated such sums as may be necessary to carry out this section.

F:\M4\HAYWOR\HAYWOR.002

I.L.C.

EN BLOC AMENDMENTS TO H.R. 562

OFFERED BY MR. HAYWORTH

Page 2, line 20, strike "360/80,011, and dated September 1994." and insert "360/80,008, and dated June 1994."

Page 2, after line 23, insert the following: "The Secretary of the Interior, in consultation with the Secretary of Agriculture, is authorized to make technical and clerical corrections to such map."

Page 3, after line 21, insert the following:

- 1 SEC. 8. AUTHORIZATION OF APPROPRIATIONS.
- 2 There is hereby authorized to be appropriated such
- 3 sums as may be necessary to carry out this Act.

January 28, 1985 (9:51 a.m.)



ESTABLISHMENT AND BOUNDARY-INCREASE LEGISLATION

WALNUT CANYON NATIONAL MONUMENT

Establishment: Proclamation (No. 1318) of November 30, 1915

Boundaries enlarged: Proclamation (No. 2300) of September 24, 1938

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A P R O C L A M A T I O N

(No. 1318--Nov. 30, 1915--39 Stat. 1761)

WHEREAS, certain prehistoric ruins of ancient cliff dwellings situated upon public lands of the United States, and located in what is commonly known as Walnut Canyon, about eight miles south-east of the city of Flagstaff, Arizona, are of great ethnologic, scientific, and educational interest, and it appears that the public interests would be promoted by reserving these relics of a vanished people, with as much land as may be necessary for the proper protection thereof, as a National Monument;

NOW, THEREFORE, I, Woodrow Wilson, President of the United States of America, by virtue of the power in me vested by section two of the Act of Congress approved June 8, 1906, entitled "An Act for the Preservation of American Antiquities" do proclaim that there are hereby reserved from appropriation and use of all kinds under all of the public land laws, subject to all prior valid adverse claims, and set aside as the Walnut Canyon National Monument, all those certain tracts of land, in the State of Arizona, more particularly described as follows, to-wit;

APPENDIX 1-1

The southwest quarter of section twenty-five, the south half of section twenty-six, the north half of section thirty-five, and the northwest quarter of section thirty-six, township twenty-one north, range eight east, Gila and Salt River Meridian, as shown upon the diagram hereto attached and made a part of this proclamation.

The reservation made by this proclamation is not intended to prevent the use of lands for forest purposes under the proclamation establishing the Coconino National Forest, but the two reservations shall both be effective on the land withdrawn, but the National Monument hereby established shall be the dominant reservation, and any use of the land which interferes with its preservation or protection as a National Monument is hereby forbidden.

Warning is hereby given to all unauthorized persons not to appropriate, injure, remove, or destroy, any feature of this National Monument, or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this thirtieth day of November in the year of our Lord one thousand nine hundred and fifteen, and of the independence of the United States the one hundred and fortieth.

WOODROW WILSON

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A P R O C L A M A T I O N

(No. 2300--Sept. 24, 1938--53 Stat. 2469)

WHEREAS the herinafter-described lands comprising a part of the Coconino National Forest, in the State of Arizona, are adjacent to the Walnut Canyon National Monument, established by proclamation dated November 30, 1915; and

WHEREAS such lands have situated thereon various objects of historic and scientific interest, and are also required for the proper care and management of the objects of historic and scientific interest now being protected by the said monument:

NOW, THEREFORE, I, Franklin D. Roosevelt, President of the United States of America, under and by virtue of the authority vested in me by section 1 of the act of June 4, 1897, 30 Stat. 11, 34. 36 (U.S.C., title 16 sec. 473), and section 2 of the act of June 8, 1906, c. 3060, 34 Stat. 225 (U.S.C., title 16, sec. 431), do proclaim that, subject to all valid existing rights, the following described lands in the State of Arizona are hereby excluded from the said Coconino National Forest and are hereby added to and made a part of the said Walnut Canyon National Monument:

GILA AND SALT RIVER MERIDIAN--ARIZONA

T.21 N., R.8 E., sec. 26. SE $\frac{1}{4}$ NE $\frac{1}{4}$, lot 3, S $\frac{1}{2}$ NW $\frac{1}{4}$,
sec. 36. NE $\frac{1}{4}$, N $\frac{1}{2}$ S $\frac{1}{2}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$;

T.21 N., R.9 E., sec. 31. W $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$ and
lots 1 to 5, inclusive, containing 913.16 acres.

APPENDIX 1-3

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of the monument as provided in the act of Congress entitled "An act to establish a National Park Service, and for other purposes," approved August 25, 1916, 39 Stat. 535 (U.S.C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof.

IN WITNESS WHEREOF I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this 24th day of September in the year of our Lord nineteen hundred and thirty-eight, and of the Independence of the United States of America the one hundred and sixty-third.

FRANKLIN D. ROOSEVELT

UNITED STATES DEPARTMENT OF THE INTERIOR
CODE OF FEDERAL REGULATIONS TITLE 43--PUBLIC LANDS; INTERIOR

Chapter I--Bureau of Land Management

Appendix--Public Land Orders

Public Land Order 1269

(Arizona 07289)

ARIZONA

WITHDRAWING PUBLIC LANDS AS A MATERIAL SITE AND FOR THE
CONSTRUCTION OF AN APPROACH ROAD IN CONNECTION WITH
THE WALNUT CANYON NATIONAL MONUMENT

By virtue of the authority vested in the President and pursuant to Executive Order No. 10355 of May 26, 1952, it is ordered as follows:

Subject to valid existing rights, the hereinafter described public lands in Arizona are hereby withdrawn from all forms of appropriation under the public-land laws, including the mining and mineral-leasing laws, and reserved for use of the Department of the Interior for the following purposes:

a. As a source of materials for road construction for the Walnut Canyon National Monument Approach road:

Gila and Salt River Meridian

T. 21 N., R. 8 W.

sec. 23, E $\frac{1}{2}$ SE $\frac{1}{2}$ NE $\frac{1}{2}$

sec. 24, W $\frac{1}{2}$ SW $\frac{1}{2}$ NW $\frac{1}{2}$

The tracts described contain 40 acres.

b. For the location of a right-of-way for the proposed Walnut Canyon National Monument approach road:

A strip of land 500 feet on either side of the centerline of the Walnut Canyon National Monument approach road through the following

APPENDIX 1-5

legal sub-divisions:

Gila and Salt River Meridian

Coconino National Forest

T. 21 N., R. 8 E.,

sec. 14, E $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$

sec. 13, W $\frac{1}{2}$ SW $\frac{1}{4}$.

sec. 23, NE $\frac{1}{4}$ NE $\frac{1}{4}$

sec. 24, SW $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$

sec. 25, NW $\frac{1}{4}$

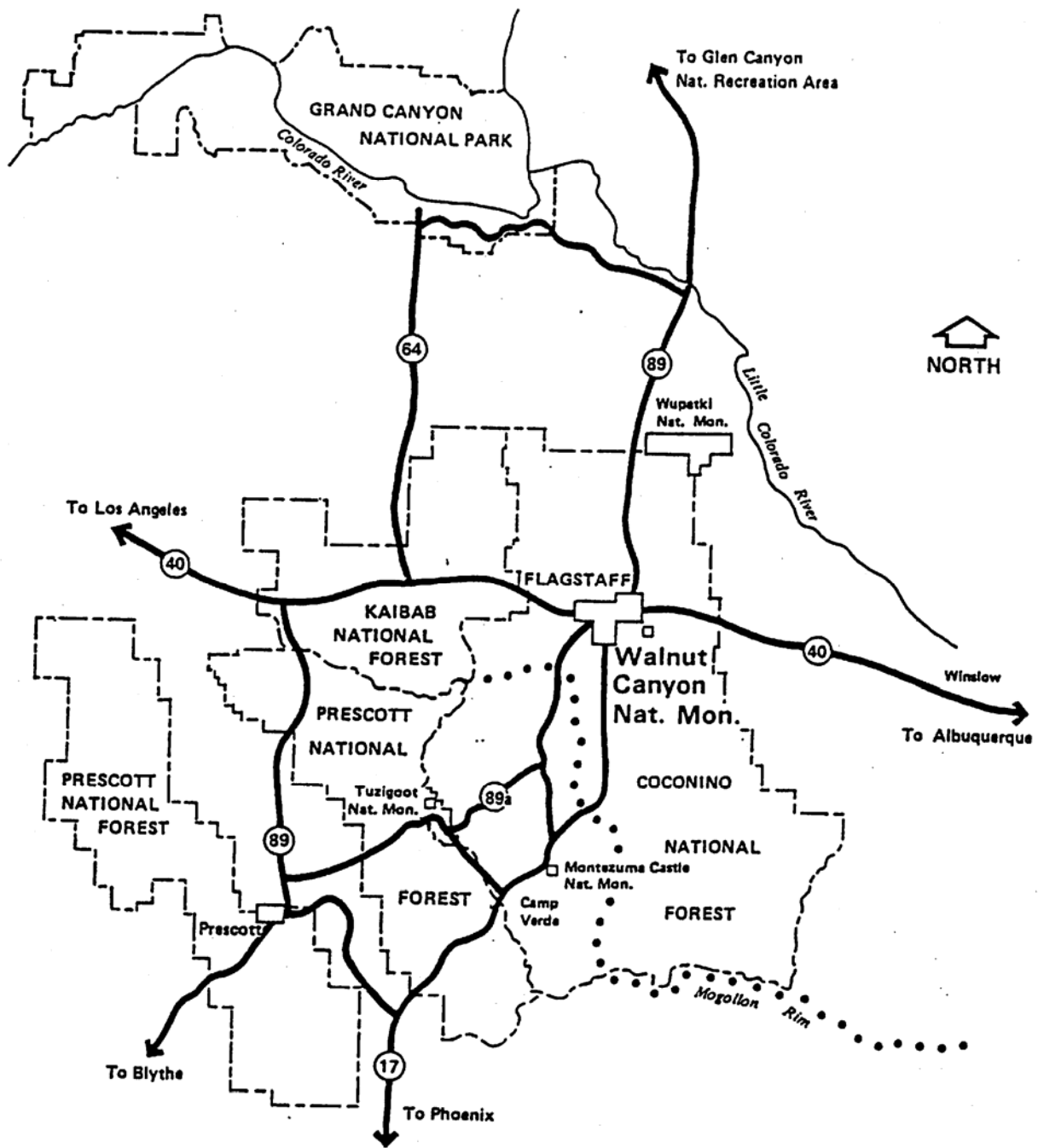
The areas described aggregate 330 acres.

This order shall take precedence over but not otherwise affect the existing reservation of the lands for national forest purposes.

Feb. 28, 1956

/s/ Wesley A. D'Ewart

Assistant Secretary of the Interior

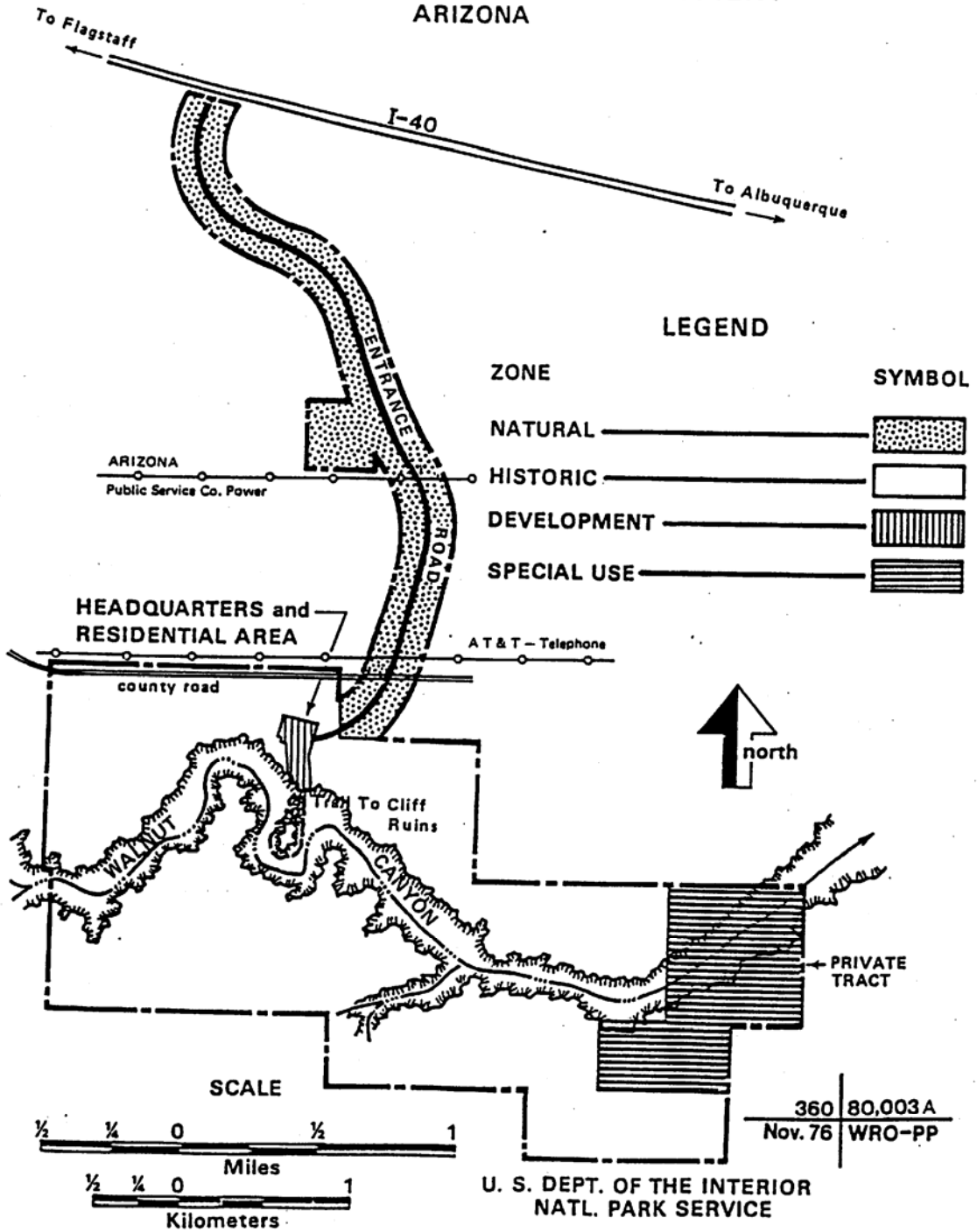


The Region

Walnut Canyon National Monument
ARIZONA

360 | 80,004
FEB. 78 | WRO-PP

LAND CLASSIFICATION WALNUT CANYON NATIONAL MONUMENT ARIZONA



72. Sunset Crater National Monument

Establishment: Proclamation (No. 1911) of May 26, 1930..... Page
303

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1911—May 26, 1930—46 Stat. 3023]

WHEREAS certain geologic formations on lands of the United States, within the Coconino National Forest, in the State of Arizona, are of scientific and public interest, and

WHEREAS the proper protection of such formations appears to be desirable;

NOW, THEREFORE, I, Herbert Hoover, President of the United States of America, by virtue of the power in me vested by section 2 of the act of Congress approved June 8, 1906 (U. S. Code, title 16, sec. 431), do proclaim that there are hereby reserved from all forms of appropriation under the public land laws, subject to all prior valid adverse claims, and set apart as a national monument, the following described lands, in the State of Arizona, which shall hereafter be known as the Sunset Crater National Monument:

T. 23 N., R. 8 E., Gila and Salt River meridian, Arizona, secs. 13, 14, 23, 24, SE. $\frac{1}{4}$ and S. $\frac{1}{2}$ NE. $\frac{1}{4}$ sec. 15, NE. $\frac{1}{4}$ and N. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 22.

The reservation made by this proclamation is not intended to prevent the use of the lands for national forest purposes under the proclamation establishing the Coconino National Forest, and the two reservations shall both be effective on the land withdrawn, but the national monument hereby established shall be the dominant reservation, and any use of the land which interferes with its preservation or protection as a national monument is hereby forbidden.

Warning is hereby given to all unauthorized persons not to appropriate, injure, deface, remove, or destroy any features of this national monument, or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this 26th day of May, in the year of our Lord nineteen hundred and thirty, and of the Independence [SEAL.] of the United States of America the one hundred and fifty-fourth.

HERBERT HOOVER.

By the President:
HENRY L. STINSON,
Secretary of State.

SEC. 207. WUPATKI NATIONAL MONUMENT BOUNDARY ADJUSTMENT.

The boundaries of the Wupatki National Monument, Arizona, are hereby revised to include the lands and interests in lands within the area generally depicted as "Proposed Addition 168.89 Acres" on the map entitled "Boundary-- Wupatki and Sunset Crater National Monuments, Arizona", numbered 322-80,021, and dated April 1989. The map shall be on file and available for public inspection in the Office of the National Park Service, Department of the Interior. Subject to valid existing rights, Federal lands and interests therein within the area added to the monument by this section are hereby transferred without monetary consideration or reimbursement to the administrative jurisdiction of the National Park Service, to be administered as part of the monument in accordance with the laws and regulations applicable thereto.

81. Wupatki National Monument

	Page
Establishment: Proclamation (No. 1721) of December 9, 1924.....	322
Boundaries enlarged: Proclamation (No. 2243) of July 9, 1937.....	324
Excluding certain land: Proclamation (No. 2454) of January 23, 1941.....	325

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1721—Dec. 9, 1924—43 Stat. 1977]

WHEREAS, there are located in Arizona, about 30 miles northeast of Flagstaff, two groups of prehistoric ruins built by the ancestors of a most picturesque tribe of Indians still surviving in the United States, the Hopi or People of Peace; and

WHEREAS, it appears that the public interest would be promoted by reserving these prehistoric remains as a National Monument together with as much land as may be necessary for the proper protection thereof,

NOW, THEREFORE, I, Calvin Coolidge, President of the United States of America, by virtue of the power in me vested by section two of the act of Congress entitled, "An Act for the Preservation of American Antiquities," approved June 8, 1906 (34 Stat., 225) do proclaim that there are hereby reserved from all forms of appropriation under the public land laws, subject to all prior valid claims, and set apart as a National Monument to be known as the Wupatki National Monument those two pieces or parcels of land outlined upon the diagram hereto annexed and made a part hereof and more particularly described as follows: The S½ Sec. 32, Township 26 North, Range 9 East; all Sec. 6, W½ Sec. 5, N½ Sec. 7, Township 25 North, Range 9 East; SE¼ Sec. 1, NE¼ Sec. 12, Township 25 North, Range 8 East; and the N½ Sec. 30, Township 25 North, Range 10 East, of the Gila and Salt River Meridian.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any of the features or objects included within the boundaries of this Monument and not to locate or settle upon any of the lands thereof.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management and control of this Monument, as provided in the act of Congress entitled, "An Act to establish a National Park Service, and for other purposes," approved August 25, 1916 (39 Stat., 535) and Acts additional thereto or amendatory thereof.

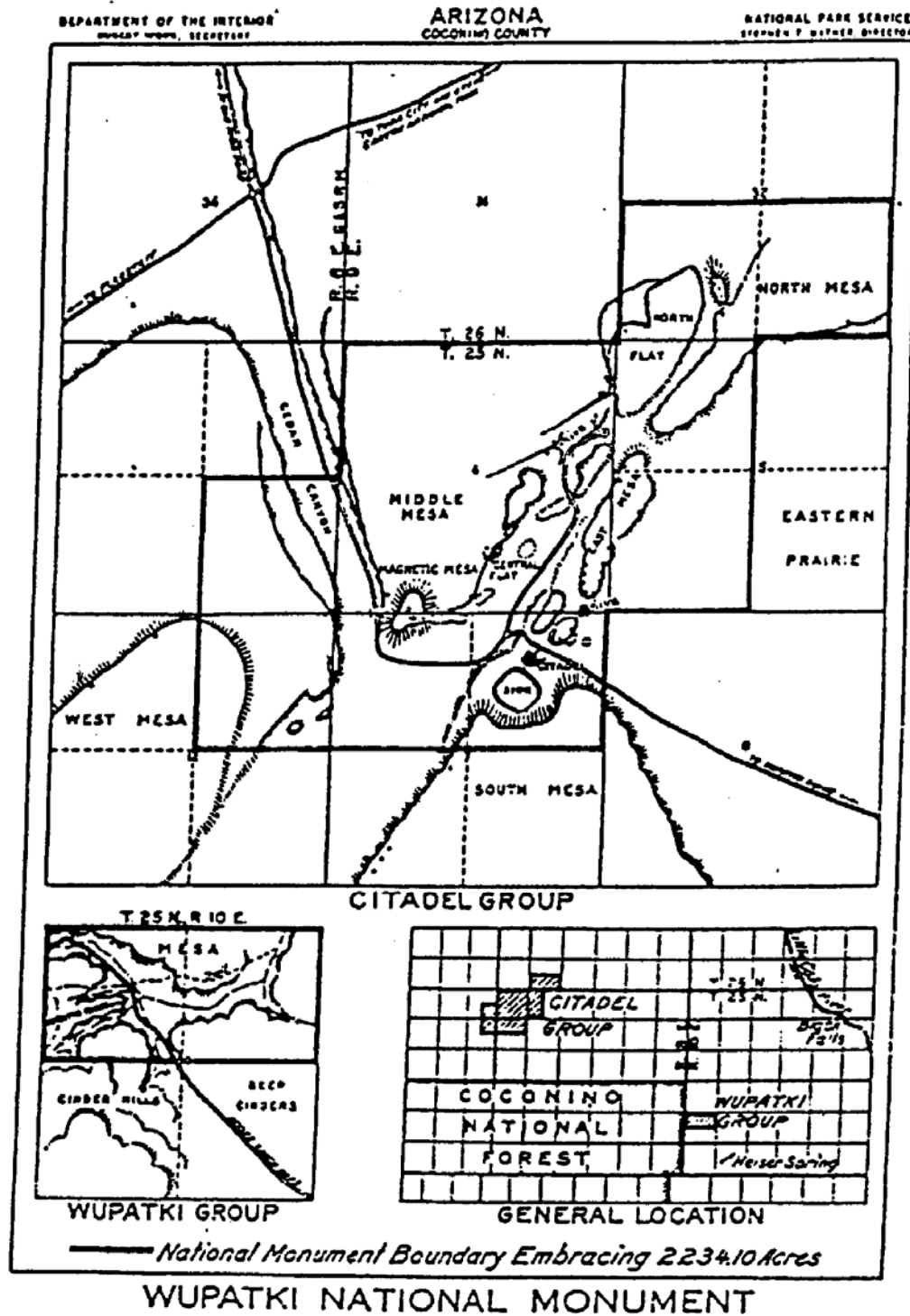
IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE in the City of Washington this 9th day of December, in the year of our Lord one thousand nine hundred and twenty-four, and [SEAL] of the Independence of the United States of America the one hundred and forty-ninth.

CALVIN COOLIDGE.

By the President:

CHARLES E. HUGHES,
Secretary of State.



BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 2243—July 9, 1937—50 Stat. 1841]

WHEREAS certain land contiguous to the Wupatki National Monument, established by Proclamation of December 9, 1924 (43 Stat. 1977), have situated thereon prehistoric and archaeological ruins of historic and scientific interest; and

WHEREAS there are other lands contiguous to the said Monument which are necessary for the proper care, management, and protection of the prehistoric ruins situated on the lands now included in the aforesaid Monument and on the additional lands above referred to; and

WHEREAS it appears that it would be in the public interest to reserve such lands as an addition to the Wupatki National Monument:

NOW, THEREFORE, I, Franklin D. Roosevelt, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 8, 1906, ch. 3060, 34 Stat. 225 (U. S. C., title 16, sec. 431), do proclaim that, subject to the withdrawal made by order of the Secretary of the Interior of July 9, 1934, in aid of the consolidations authorized by the act of June 14, 1934, ch. 521, 48 Stat. 960, and subject to all valid existing rights, the following-described lands in Arizona are hereby reserved and added to and made a part of the Wupatki National Monument:

GILA AND SALT RIVER MERIDIAN

T. 25 N., R. 8 E., sec. 1, N $\frac{1}{2}$ and SW $\frac{1}{4}$;

secs. 2 and 11;

sec. 12, W $\frac{1}{2}$ and SE $\frac{1}{4}$;

secs. 13 and 14;

All those parts of secs. 3, 10 and 15 lying east of the east line of the right of way of U. S. Highway No. 89;

T. 25 N., R. 9 E., secs. 1 to 4, inclusive;

sec. 5, E $\frac{1}{2}$;

sec. 7, S $\frac{1}{2}$;

secs. 8 to 18, inclusive;

T. 26 N., R. 9 E., sec. 32, N $\frac{1}{2}$;

T. 25 N., R. 10 E., sec. 1, lots 1 to 4, inclusive, W $\frac{1}{2}$ SW $\frac{1}{4}$ and SE $\frac{1}{4}$ SW $\frac{1}{4}$;

sec. 2, lots 1 to 5, inclusive, S $\frac{1}{2}$ NW $\frac{1}{4}$ and S $\frac{1}{2}$;

secs. 3 to 12, and 14 to 22, inclusive;

secs. 28 and 29;

sec. 30, S $\frac{1}{2}$;

secs. 31 and 32;

T. 26 N., R. 10 E., sec. 16, SW $\frac{1}{4}$;

sec. 17, SE $\frac{1}{4}$;

sec. 20;

sec. 21, NW $\frac{1}{4}$;

secs. 29 and 32.

containing 33,631.20 acres.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this Monument and not to locate or settle upon any of the lands thereof.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of the Monument as provided in the act of Congress entitled "An Act To establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535, U. S. C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this 9th day of July in the year of our Lord nineteen hundred and thirty-seven and of the Independence of the United States of America the one hundred and sixty-second.

FRANKLIN D. ROOSEVELT.

By the President,
CORDELL HULL,
The Secretary of State.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 2454—Jan. 22, 1941—55 Stat. 1608]

WHEREAS it appears that certain lands which are now a part of the Wupatki National Monument in the State of Arizona, established by Proclamation of December 9, 1924, 43 Stat. 1977, and enlarged by Proclamation of July 9, 1937, 50 Stat. 1841, are not necessary for the proper care and management of the objects of historic and scientific interest situated on the lands within the said monument; and

WHEREAS it appears that it would be in the public interest to exclude such lands from the Wupatki National Monument; and

WHEREAS such lands are needed in the construction and operation of a diversion dam in Little Colorado River to facilitate the irrigation of lands on the Navajo Indian Reservation:

NOW, THEREFORE, I, Franklin D. Roosevelt, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 8, 1906, c. 3060, 34 Stat. 225 (U. S. C., title 16, sec. 431), and by the act of June 25, 1910, c. 421, 36 Stat. 847 (U. S. C., title 43, sec. 141), as amended by the act of August 24, 1912, c. 369, 37 Stat. 497 (U. S. C., title 43, sec. 142), do proclaim that the lands comprising Lots 1 and 2, Section 12, Township 25 North, Range 10 East, Gila and Salt River Meridian, Arizona, comprising 52.27 acres, are hereby excluded from the Wupatki National Monument, and temporarily withdrawn from settlement, location, sale, or entry and reserved for use in connection with the construction and operation of a diversion dam in Little Colorado River for irrigating Navajo Indian lands. The provisions of the Proclamations of December 9, 1924, and July 9, 1937, shall remain in full force and effect as to all other lands thereby reserved as a national monument.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this 22d day of January in the year of our Lord nineteen hundred and forty-one, and of the Independence of the United States the one hundred and sixty-fifth.

FRANKLIN D. ROOSEVELT.

By the President:
CORDELL HULL,
The Secretary of State.

41. Wupatki National Monument

Boundaries revised and public access to certain ruins provided.....	Page
-----Act of August 10, 1961	400

An Act To authorize an exchange of lands at Wupatki National Monument, Arizona, to provide access to certain ruins in the monument, to add certain federally owned lands to the monument, and for other purposes, approved August 10, 1961 (75 Stat. 337)

Wupatki
National Monu-
ment, Ariz.
Lands,
exchange.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior may, in his discretion, obtain a valid title for the United States to the lands described as: southeast quarter, section 17, and section 29, township 26 north, range 10 east, Gila and Salt River meridian, for addition to the Wupatki National Monument in exchange for lands of approximately equal value described as: southwest quarter, section 16, township 26 north, range 10 east, and section 32, township 26 north, range 9 east, Gila and Salt River meridian. The lands conveyed by the Secretary and the privately owned land known as northwest quarter, section 21, township 26 north, range 10 east, Gila and Salt River meridian, shall, after execution of the exchange, cease to be a part of the Wupatki National Monument.

SEC. 2. The Secretary may, in his discretion, accept the donation of a permanent easement for a road right-of-way two hundred feet wide for the purpose of providing public access to the significant Crack-in-Rock Ruin which lies within the monument: *Provided,* That no road may be constructed upon the right-of-way without further legislative authority. The right-of-way to the ruin shall extend across terrain suitable to the Secretary from any point on the north line of township 25 north, ranges 9 or 10 east, Gila and Salt River meridian, which he may select.

SEC. 3. Subject to valid existing rights, the public lands lying west of the west right-of-way line of United States Highway 89 in section 3, township 25 north, range 8 east, Gila and Salt River meridian, consisting of lot 4, southwest quarter northwest quarter, northwest quarter southwest quarter and the westerly portions of lot 3, southeast quarter northwest quarter, and east one-half southwest quarter are added to and made a part of the Wupatki National Monument.

APPENDIX B: RESOURCE ATTRIBUTES

Table 5: Resource Attributes for Visitor Use, Walnut Canyon NM									
Resource Experience Opportunity Areas	Size/Extent of Resource (%)	Relative Commonness of Resource		Ability of Resource to Conceal Use	Potential Interest of Resource to Visitor	Ability of Resource to Withstand Use	Relative Importance of Area to Purpose, Significance, and Interpretive Themes	Sites or Features of Critical Importance to Purpose, Significance, and Interpretive Themes	
		In Park	Out of Park						
Inner Canyon w/Archeological Concentrations	5	2	1	4	5	1	5		
Inner Canyon w/o Archeological Concentrations	15	3	2	4	4	2	3		
Inner Canyon w/Archeological Concentrations	3	2	1	5	5	1	5		
Inner Canyon w/o Archeological Concentrations	20	3	2	5	4	2	3		
Forested Rim	30	4	4	5	3	4	4		
Forested Rim	25	4	4	5	3	4	4		
Broad, Flat Alluvium	2	1	2	2	3	3	5		
Chained Area	1	2	4	3	1	4	1		
Shaded Tributaries	2	2	3	5	4	2	4		
Canyon Bottom	2	1	4	4	5	3	5		
Promontories	<1	2	3	2	5	2	5		
		In Park	Out of Park						
Reservoir	<1	1	3	2	3	4	1		
N Rim Historical Area	3	1	3	3	3	4	2	Historic cabin less resilient	
		1. Unique 2. Rare 3. Uncommon 4. Common 5. Abundant		1. Very Low 2.Low 3. Moderate 4. High 5. Very High					

APPENDIX C: CHOOSING BY ADVANTAGES AND COSTS

WACA Alternative #1			
Description	Qty.	Cost/Unit	Net Cost
New Orientation / wayside (10 cars)	10	\$2,200	\$22,000
wayside	4	\$10,000	\$40,000
New Parking / Orientation (40 cars, 5 RV)	40	\$2,200	\$88,000
wayside	5	\$10,000	\$50,000
RV's	5	\$6,400	\$32,000
New Admin. Office	2000	\$165	\$330,000
New Trail	0.2	\$95,000	\$19,000
New Road new gravel	3	\$480,000	\$1,440,000
Improve existing gravel road	2.5	\$240,000	\$600,000
Adapt Visitor Center	3500	\$100	\$350,000
New Wayside	10	\$5,000	\$50,000
New V.C. Exhibits			\$500,000
TOTAL			\$3,521,000

WACA Alternative #2			
Description	Qty.	Cost/Unit	Net Cost
New Visitor Center	3500	\$265	\$927,500
New Parking / Orientation (40 cars, 5 RV)	40	\$2,200	\$88,000
RV's	5	\$6,400	\$32,000
New Admin. Office	2000	\$165	\$330,000
Improve existing gravel road	2.5	\$240,000	\$600,000
Adapt Visitor Center	1500	\$100	\$150,000
Demolish Modern Addition	2000	\$5	\$10,000
New Wayside	10	\$5,000	\$50,000
New V.C. Exhibits			\$500,000
TOTAL			\$2,687,500

Note: All estimates in FY 2000 dollars.

APPENDIXES/REFERENCES

Project/Location: Walnut Canyon - General Management Plan

6/1/00 (FY 2000 Dollars)

Subject: Functional Component

Description:

Project Life Cycle = 25 Years

Discount Rate = 7.00%

Present Time = Current Date

			Alternative 1		Alternative 2	
INITIAL COSTS	Quantity UM	Unit Price	Est.	PW	Est.	PW
Construction Costs						
A.		\$0.00	3,521,000	3,521,000	2,687,000	2,687,000
B.		\$0.00		0		0
C.		\$0.00		0		0
D.		\$0.00		0		0
E.		\$0.00		0		0
F.		\$0.00		0		0
G.				0		0
Total Initial Cost				3,521,000		2,687,000
Initial Cost PW Savings (Compared to Alt. 1)						834,000
REPLACEMENT COST/ SALVAGE VALUE						
Description	Year	PW Factor				
A. V.C. Replacement	5	0.7130		0	180,000	128,337
B. V.C. Replacement	10	0.5083		0	180,000	91,502
B. V.C. Replacement	15	0.3624		0	180,000	65,240
B. V.C. Replacement	20	0.2584		0	180,000	46,515
C.	0	1.0000		0		0
D.	0	1.0000		0		0
E.	0	1.0000		0		0
Total Replacement/Salvage Costs				0		331,594
ANNUAL COSTS						
Description	Escl. %	PWA				
A. Maintenance - V.C.	0.000%	11.654		0		0
B. Operations	0.000%	11.654		0		0
C. Staffing	0.000%	11.654	79,500	926,460	79,500	926,460
D. Guided Tours	0.000%	11.654		0		0
E. Seminars	0.000%	11.654		0		0
F.	0.000%	11.654		0		0
Total Annual Costs (Present Worth)				926,460		926,460
Total Life Cycle Costs (Present Worth)				4,447,460		3,945,054
Life Cycle Savings (Compared to Alt. 1)						502,406

GLOSSARY

Advisory Council on Historic Preservation (ACHP). An independent federal agency with statutory authority to review and comment on federal actions affecting properties listed in or eligible for listing in the National Register of Historic Places.

air quality. A measure of the health-related and visual characteristics of the air often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

air quality class II areas. Regions in attainment areas where maintenance of existing good air quality is of high priority. Class II areas permit moderate deterioration of existing air quality.

alternative. One of at least two proposed means of accomplishing planning objectives.

archeological resource. Any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.

backcountry. All nondeveloped areas within the park. Generally considered to be all areas beyond developed facilities and visitor use areas, (operational areas, campgrounds, picnic areas, visitor centers, visitor contact stations), developed interpretive areas (view points, wayside orientation exhibits, developed archeological resources with designated trails), and designated trails, trailheads, and roads.

cultural landscape. A geographic area, including both cultural and natural

resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

cultural landscape inventory (CLI). The CLI is a computerized, evaluated inventory of all cultural landscapes in which NPS has or plans to acquire any legal interest. Its purpose is to identify cultural landscapes in the system and provide information on their location, historical development, character-defining features, and management. The CLI assists park managers in planning, programming, and recording treatment and management decisions. CLI forms, including maps, drawings, and photographs, are completed and maintained at the regional offices, with copies provided to the parks.

cultural resources. An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource can be a tangible entity or a cultural practice.

cumulative effects. The culmination of a proposed action when added to past, present, and reasonably foreseeable future actions; action can be taken by anyone and can occur inside or outside the park.

ecosystem. A system made up of a community of animals, plants, and bacteria and its interrelated physical and chemical environment.

endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range [16 USC §1532(6)].

environmental impact statement (EIS). Required by the National Environmental Policy Act to examine a

range of federal actions and their potential effects on the human environment.

ethnographic landscape. Areas containing a variety of natural and cultural resources that associated people define as heritage resources.

ethnographic resource. A site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

floodplain. A plain along a river, formed from sediment deposited by floods.

four-wheel-drive. Four-wheel-drive, differential transfer case disperses 50/50 front and rear displacement. Trucks, cars, buses, or sports utility vehicles with high clearance and the ability to operate off-pavement as well as on highways.

front country. Areas within the park that contain development for visitor use and park operations. Generally considered to be all areas with developed facilities and visitor use areas, (operational areas, campgrounds, picnic areas, visitor centers, visitor contact stations), developed interpretive areas (view points, wayside orientation exhibits, developed/stabilized archeological resources with designated trails), and designated trailheads, trails, and roads.

full-time equivalents (FTEs). Staff positions that include 40 hours of work per week all year.

habitat. A specific set of physical conditions in a geographic area that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

integrity. The authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during its historic or prehistoric period; the extent to which a property retains its historic appearance.

interpretation. A communication process designed to reveal meanings and relationships of our cultural and natural heritage to the public through firsthand experiences with objects, artifacts, landscapes, or sites; facilitating a connection between the interests of the visitor and the meaning of the park by explaining the park's purpose and significance; usually a single contact with a group or individual.

mitigating measures. Constraints, requirements, or conditions imposed to reduce the significance of or eliminate an anticipated impact to environmental, socioeconomic, or other resource value from a proposed land use.

National Register of Historic Places (NRHP). The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture kept by NPS under authority of the National Historic Preservation Act of 1966.

natural soundscapes. The total ambient acoustic environment associated with a given environment (sonic environment) in an area such as a national park or the total ambient sound level for the park. In a national park setting, this soundscape is usually composed of both ambient sounds and a variety of human-made sounds. This sonic environment is an important resource of many parks; there can also be important relationships between how this environment is perceived and understood by individuals and society.

riparian areas. Zones of transition from aquatic to terrestrial ecosystems, dependent on surface and/or subsurface water for existence and which manifest the influence of that water.

scoping. Planning process that solicits people's opinions on the value of a park, issues facing a park, and the future of a park.

sensitive species. Those plant and animal species for which population viability is a concern.

State Historic Preservation Officer (SHPO). An official within each state appointed by the governor to administer the state historic preservation program and carry out certain responsibilities relating to federal undertakings within the state.

threatened and endangered species. Any species of fish, wildlife, or plant that is listed as threatened or endangered by the U.S. Fish and Wildlife Service.

traditional cultural property (TCP). A property associated with cultural practices or beliefs of a living community that are rooted in that community's

history or are important in maintaining its cultural identity. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.

U.S.C. United States Code. Contains the general and permanent laws of the United States.

visitor use. Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

wetlands. Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

wilderness area. An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to "the public purposes of recreation, scenic, scientific, educational, conservation, and historical use."

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