



MONTEZUMA CASTLE



MONTEZUMA WELL



TUZIGOOT



General Management Plan / Environmental Assessment

MONTEZUMA CASTLE NATIONAL MONUMENT AND TUZIGOOT NATIONAL MONUMENT

Yavapai County, Arizona

January 2010

As the responsible agency, the National Park Service prepared this general management plan to establish the direction of management of Montezuma Castle National Monument and Tuzigoot National Monument for the next 15 to 20 years. The general management plan provides comprehensive, integrated guidance for preserving cultural resources, perpetuating natural systems, providing opportunities for visitor enjoyment and understanding, and establishing the organizational mechanism to accomplish the plan.

The previous general management plan for Montezuma Castle and Tuzigoot national monuments was completed in 1975. Since then, much has changed, including visitor use patterns, land uses in the Verde Valley outside the monuments, and area populations. These changes affect how visitors access and use the national monuments, the facilities needed to support those uses, management of resources, and how the National Park Service manages its operations. Therefore, a new plan is needed to allow the monuments to achieve desired conditions that implement goals of the National Park Service and the public for management and preservation of cultural and natural resources.

The environmental assessment that was prepared to determine the impacts of the general management plan considered three alternatives:

- Alternative A, the no-action alternative;
- Alternative B, which is the National Park Service preferred alternative and emphasizes opportunities to connect the monuments, including Montezuma Well (a detached unit of Montezuma Castle National Monument), with improved regional orientation to the Verde Valley; and
- Alternative C, which emphasizes self-discovery of the monuments' resources.

The environmental assessment was prepared in compliance with the National Environmental Policy Act to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and impacts to the monuments' resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics included in this document because impacts may be greater than minor include cultural resources, natural resources, visitor use and experience, socioeconomics, and monument operations. Other resource topics were dismissed because the plan would result in negligible or minor effects. No major effects are anticipated as a result of this plan. Public scoping was conducted to assist with the development of this document, and comments received during scoping are to a great extent reflected in the content of this document and were considered in the development of the action alternatives.

HOW TO COMMENT ON THIS PLAN

If you wish to comment on the environmental assessment, you may post comments online at <http://parkplanning.nps.gov/moca>.

You may mail comments to

Montezuma Castle and Tuzigoot National Monuments
General Management Plan
National Park Service
Denver Service Center
Attn: Cynthia Nelson
P.O. Box 25287
Denver, CO 80225

You may also hand deliver comments to Montezuma Castle and Tuzigoot National Monument Headquarters, 527 South Main Street, Camp Verde, Arizona.

This environmental assessment will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

SUMMARY

PURPOSE AND NEED FOR A GENERAL MANAGEMENT PLAN

The purpose of this general management plan is to establish a clear vision for the direction of management of Montezuma Castle and Tuzigoot national monuments for the next 15 to 20 years. The general management plan will provide comprehensive and integrated guidance for preserving cultural resources, perpetuating natural systems, providing opportunities for visitor enjoyment and understanding, and establishing the organizational mechanism to accomplish the plan.

Montezuma Castle National Monument was established in 1906 under the authority of the Antiquities Act. Since then, Congress passed legislation in 1937, 1959, 1978, and 2003 expanding the boundary of the monument to better protect the natural and cultural resources adjacent to the cliff dwellings.

Montezuma Well was added as a detached unit of Montezuma Castle National Monument by an Act of Congress in 1943. Congress expanded the boundary of the well site in 1959 to protect resources adjacent to the well and for administrative purposes.

Tuzigoot National Monument was established by presidential proclamation on July 25, 1939, to protect the prehistoric structures. The boundary was expanded by an Act of Congress in 1965 and again in 1978. Additional lands were conveyed through a land exchange in 2005.

The last comprehensive planning effort (general management plan) for Montezuma Castle and Tuzigoot national monuments was completed in 1975.

Since then, much has changed, including patterns and types of visitor use, land uses in the Verde Valley outside the monuments, and area populations. These

changes affect how visitors access and use the national monuments, the facilities needed to support those uses, management of resources, and how the National Park Service (NPS) manages its operations. Therefore, a new plan is needed to:

- Set forth the basic management philosophy or vision for Montezuma Castle and Tuzigoot national monuments and provide strategies for achieving identified management objectives (“desired future conditions”).
- Clearly define resource conditions and visitor use and experience to be achieved in the monuments.
- Identify the kinds of resource protection, management, use, and development that will be appropriate in achieving and maintaining those conditions.
- Identify future partnerships and collaborative planning efforts that would facilitate the realization of the monuments’ goals.
- Provide a framework for the monuments’ managers to use to make decisions about protecting Montezuma Castle and Tuzigoot national monuments’ resources, provide quality visitor use and experience, manage visitor use, and determine the kinds of facilities, if any, to develop in and near the monuments.

- Ensure that the basic foundation for decision-making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action.
- Investigate the potential for boundary modifications.

ALTERNATIVES AND THEIR IMPACTS

This *General Management Plan and Environmental Assessment* presents three alternatives for management of Montezuma Castle and Tuzigoot national monuments. They include:

- Alternative A, the no-action alternative (continue current management);
- Alternative B, the National Park Service preferred alternative, which emphasizes opportunities to connect the three sites with improved regional orientation to the Verde Valley; and
- Alternative C, which emphasizes self-discovery of the monuments' resources.

The alternatives, which are based on the monuments' mission, purpose, and significance, present different ways to manage resources and visitor use and improve facilities and infrastructure. Additional actions and alternatives were considered but were dismissed for the reasons described in chapter 2.

Alternative A: The No-Action Alternative (Continue Current Management)

This alternative would continue current management direction and trends at Montezuma Castle and Tuzigoot national monuments. It provides a baseline for comparison in evaluating the changes and impacts of the action alternatives.

Natural resources would be protected by being in the monuments. Existing opera-

tions and visitor facilities would remain in place. Opportunities for close contact between visitors and the natural and cultural resources at the sites would continue to be limited. The interpretive emphasis would continue to focus on the three primary sites within the monuments, with little connection among the sites in terms of interpretation.

At Montezuma Castle, resource activities would continue to focus on stabilizing the primary site, with intensive preservation treatment and regular cyclic maintenance. Visitor opportunities would continue to focus on viewing the Castle and visiting the visitor center. Existing administration facilities would remain the same.

At Montezuma Well, resource activities would continue to focus on monitoring water quantity. Visitor opportunities would continue to focus on viewing Montezuma Well and visiting the well outlet. The picnic area would continue to be a major draw for local visitation.

At Tuzigoot, resource activities would continue to focus on stabilizing the primary site, with intensive preservation treatment and regular cyclic maintenance. Visitor opportunities would continue to focus on exploring the pueblo and visiting the visitor center/museum.

Although the no-action alternative may not meet all goals set forth for this general management plan, it serves as the baseline against which the action alternatives are evaluated. The important impacts of continuing existing management conditions and trends would include the following.

- Ongoing management actions would continue to allow current hydrological conditions to persist in Tavasci Marsh in Tuzigoot National Monument, which would have a long-term, minor to moderate, adverse impact on wetland functions and habitat.
- Informal access to the Verde River at Tuzigoot National Monument would

continue, representing a long-term, minor, adverse effect on wildlife.

- Change in the Tavaschi Marsh habitat exposure could have a long-term effect on flycatcher habitat and the Yuma clapper rail, but would result in a “not likely to adversely affect” determination.
- Alternative A would result in continuing minor, beneficial impacts resulting from the continued opportunities to view the monuments’ prime cultural resources. However, minor, adverse impacts from crowding and congestion during peak-use time periods would continue.
- The lack of adequate interpretive and education facilities for regular and diverse programming would continue to have a minor, adverse impact to visitors.
- Long-term, minor, adverse effects on monument operations would continue because of congestion and crowding in Montezuma Castle National Monument; very limited opportunities at Montezuma Well for site orientation and interpretation; facilities which limit the monument’s ability to provide consistent and diverse interpretive programming; and the lack of efficient distribution of staff among the three sites and the headquarters and maintenance buildings, which are outside the monuments.
- Actions at Montezuma Castle and Tuzigoot national monuments would result in minor benefits and would have no adverse effect on archeological resources, prehistoric and historic structures and buildings, cultural landscapes, and ethnographic resources of the monuments.

Alternative B, Preferred

The main emphasis of this alternative is to connect the three sites with improved regional orientation to the Verde Valley

area. Visitors would be introduced to all three sites and their related interpretive themes through coordinated messaging among the three sites. Visitors would travel to the sites to learn firsthand about elements of the prehistoric and historic stories associated with human settlement of the Verde Valley.

The National Park Service would increase resource stabilization and monitoring efforts. Partnerships would improve orientation at the sites and other opportunities in the Verde Valley. More of the monuments’ cultural and natural resources would be available for visitors to explore via trails. The National Park Service would acquire 16 acres of privately owned land riparian and bluff land within Montezuma Well and most of the privately owned lands within Tuzigoot’s legislated boundaries except for the land owned by Freeport McMoRan Copper and Gold, Inc., which contain mine tailings; this land would be removed from the legislated boundary. The mine tailings do not contain resources related to the purpose and significance of the monument, are highly disturbed by mining activity, and are contaminated by hazardous substances. The monument is particularly interested in acquiring the relatively intact acreage on the bench northwest of the ruins, which has archeological sites.

At Montezuma Castle, the existing facilities for visitor services would remain much as today. Some natural-surface trails with interpretive signs may be sited across the creek to provide views to the castle. A corridor along Montezuma Castle Road would accommodate regional trail activities for horseback riding, hiking, and mountain biking. The equipment shed (determined eligible for listing in the National Register of Historic Places on July 13, 1994) would be rehabilitated and adaptively reused.

At Montezuma Well, the existing facilities leading to and around the well would remain much as today. The amount of inter-

pretation and interaction with resources associated with the long history of prehistoric and historic farming in the area would increase. The area just south and west of the picnic area would include natural surface trails improved on existing formal and informal trail routes. An addition to the visitor contact station (shade ramada) would be constructed in the parking lot near the well.

At Tuzigoot, the areas east, north, and south of the pueblo would provide natural surface trails along the marsh and riparian area. Through collaboration with partners, these trails may link with trails in Dead Horse Ranch State Park and Cocino National Forest. The existing visitor facilities would remain much as today. There would be increased cultural demonstrations in and around the pueblo. Access would be provided via trails to the river. Active marsh restoration and management activities would begin at the Tavasci Marsh. A boardwalk would be constructed through the marsh. If assessment determines that there would be no conflict with preservation of significant cultural resources, this would be constructed along an existing old road alignment. A modest workspace and storage building with emergency visitor services would be constructed near the residential area.

The important impacts of implementing alternative B would include the following.

- Active marsh restoration activities at Tuzigoot National Monument would have a negligible to minor, long-term, beneficial effect on wetland habitat functions at Tavasci Marsh.
- Trail development would have negligible to minor, short-term, adverse impacts on wildlife and wildlife habitat at Montezuma Castle National Monument.
- The boardwalk at Tavasci Marsh in Tuzigoot National Monument would have long-term, negligible to minor, adverse impacts on wildlife species.
- Marsh restoration and ongoing ditch maintenance activities at Tuzigoot National Monument would have long-term, negligible to minor benefits on flycatcher foraging habitat and on rail habitat.
- Moderate to major, beneficial effects would result from connecting the three sites and from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources.
- Providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting, and inviting for repeat visitation.
- Long-term, minor to moderate, beneficial effects on monument operations would result from increased and improved space for monument operations and from improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due to the addition of facilities that would require increased operations and maintenance.
- Actions at Montezuma Castle and Tuzigoot national monuments would result in minor benefits and would have no adverse effect on archeological resources, prehistoric and historic structures and buildings, cultural landscapes, and ethnographic resources of the monuments.

Alternative C

The main emphasis of this alternative is to provide increased opportunities for visitors to self-discover the beauty and wonder of the natural and cultural resources of the monuments. Resources would still receive the highest level of protection, and visitors could interact with and explore a wider range of the resources found in the monuments.

Protection of natural resources would be reduced compared to alternative B because of the larger development footprint

in this alternative. More of the monuments' cultural and natural resources would be available for visitors to explore via trails. Visitor stays would increase at each of the three sites. The National Park Service would acquire most of the privately owned lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary. The mine tailings do not contain resources related to the purpose and significance of the monument, are highly disturbed by mining activity, and are contaminated by hazardous substances.

At Montezuma Castle, the existing visitor facilities would remain much as today. A new headquarters would be located at the beginning of the entrance road to the monument. Access over the creek via a new bridge and some picnic facilities on the south bank of the creek would be provided. In addition, self-guided, designated trails would follow the river corridor. To provide better views of the river valley, a small number of private vehicles would be allowed access to the plateau above the cliff dwelling. A corridor along Montezuma Castle Road would accommodate regional trail activities for horseback riding, hiking, and mountain biking.

At Montezuma Well, the existing visitor facilities would remain much as today. A new visitor center is proposed at the entrance of the road to Montezuma Well. Designated natural-surface trails would be improved along existing disturbed alignments to and along the riparian area of Wet Beaver Creek, and a natural-surface, designated trail would be located near the prehistoric ditch that extends from Montezuma Well and along Wet Beaver Creek. A trail would also extend from the visitor center to Montezuma Well, following the road. The pit house along the entrance road would be accessible with a trail.

At Tuzigoot, most of the monument would be zoned to provide natural-surface trails. If assessment determines

that there would be no conflict with preservation of significant cultural resources, mountain bicycling opportunities may also be provided on old roadbeds in the area. The existing visitor facilities would remain much as today. The monuments would cooperate with the Arizona State Parks on the Verde River Greenway Management Plan proposal for a small parking area and launch for small boats on state-owned land on the east side of the monument entrance road.

The important impacts of implementing alternative C would include the following.

- Construction of a new headquarters and access and parking on the plateau at Montezuma Castle National Monument would have long-term, negligible to minor, adverse impacts on vegetation and soils.
- At Tuzigoot, the adverse impacts of trail development on vegetation and soils would be negligible to minor.
- The long-term, adverse impacts of an extended trail and boardwalk at Tuzigoot on wildlife and their habitat would be local and negligible to minor.
- Marsh restoration and ongoing ditch maintenance activities at Tuzigoot National Monument would have long-term, negligible to minor benefits on flycatcher foraging habitat and on rail habitat.
- Moderate beneficial effects would result from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources.
- Providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting, and inviting for repeat visitation.
- Long-term, moderate to major, beneficial effects on Montezuma Castle National Monument operations would result from increased and im-

proved space for monument operations, and improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due the addition of facilities that would require increased operations and maintenance.

- Actions at Montezuma Castle and Tuzigoot national monuments would result in minor benefits and would have no adverse effect on archeological resources, prehistoric and historic structures and buildings, cultural landscapes, and ethnographic resources of the monuments.
- A new visitor center at Montezuma Well would improve visitor orientation and interpretation services and contribute to better visitor understanding and appreciation of the resources of the monuments and the region, and would result in long-term, moderate, beneficial impacts on visitors.

THE NEXT STEPS

After the distribution of the general management plan and environmental assessment, there will be a 30-day public review and comment period, after which the NPS planning team will evaluate comments from other federal agencies, tribes, organizations, businesses, and individuals regarding the plan. The National Park Service expects that it will then be able to prepare a finding of no significant impact documenting the NPS selection of an alternative for implementation. After the finding has been approved by the regional director, the plan can be implemented.

IMPLEMENTATION OF THE PLAN

The approval of this plan does not guarantee that the funding needed to implement the plan will be forthcoming. The implementation of the approved plan will depend on future funding, and it could also be affected by factors such as changes in NPS staffing, visitor use patterns, and un-

anticipated environmental changes. Full implementation could be many years in the future. Once the General Management Plan has been approved, additional feasibility studies and more detailed planning, environmental documentation, and consultations would be completed, as appropriate, before certain actions in the selected alternative can be carried out.

Future program and implementation plans, describing specific actions that managers intend to undertake and accomplish in the monument, will tier from the desired conditions and long-term goals set forth in this general management plan.

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CHAPTER 1:
PURPOSE OF AND NEED FOR THE PLAN

INTRODUCTION

This *General Management Plan and Environmental Assessment* presents and analyzes alternative future directions for the management and use of Montezuma Castle and Tuzigoot national monuments. The two monuments, approximately 20 miles apart, are managed together. Within this plan, alternative B is preferred by the National Park Service (NPS). The potential environmental impacts of the alternatives have been identified and assessed.

General management plans establish and articulate a management philosophy and framework for long-term (15 to 20 years) decision-making and problem solving in units of the national park system.

Actions directed by general management plans or in subsequent implementation plans are intended to be accomplished over time. Budget restrictions, requirements for additional data or regulatory compliance, and competing NPS priorities prevent immediate implementation of many actions. Major or particularly costly actions could be implemented 10 or more years into the future. The approval of this plan does not guarantee that the funding for proposed actions will be forthcoming. The implementation of the approved plan, no matter which alternative is selected, will depend on future NPS funding levels and servicewide priorities.

A GUIDE TO THIS DOCUMENT

This document contains the general management plan and an environmental assessment that discloses the impacts associated with each of the alternatives. It conforms with:

- The Council on Environmental Quality's (1978) implementing regulations for the National Environmental Policy Act;
- NPS planning guidelines in chapter 2 of *Management Policies 2006* (NPS 2006);

- Director's Order 12 on conservation planning, environmental impact analysis, and decision-making (NPS 2001);
- Section 106 of the National Historic Preservation Act (16 *United States Code* 470 *et seq.*);
- Title 36, *Code of Federal Regulations*, section 800, Protection of Historic Properties; and
- Cultural resource management guidelines in chapter 5 of *Management Policies 2006* and Director's Order 28 and its associated guidelines.

Chapter 1: Purpose and Need sets the framework for the entire document. It describes why the plan is being prepared and what needs it must address. It gives guidance for the alternatives that are being considered, which are based on the Montezuma Castle and Tuzigoot national monuments' legislated missions, their purposes, the significance of their resources, special mandates and administrative commitments, and servicewide mandates and policies.

This chapter also details the planning opportunities and issues that were raised during public scoping meetings and initial planning team efforts that served as the basis for developing the alternatives presented in chapter 2. It presents the fundamental resources and values that guide planning and decision making, the guiding management principles that shape the monuments' management, and the relationship to other plans that could affect implementation of this general management plan. This chapter concludes with the scope of the environmental impact analysis, including the identification of the impact topics that were analyzed in detail.

Chapter 2: Alternatives, including the Preferred Alternative, begins by describing the management prescriptions that will be used to manage Montezuma Castle and

Tuzigoot national monuments in the future. Alternative A describes the continuation of current management and trends in Montezuma Castle and Tuzigoot national monuments. Alternative B (preferred) and alternative C, collectively called the action alternatives, provide other approaches for managing the monuments.

Mitigation measures to minimize or eliminate the impacts of some proposed actions are described. A discussion is also provided of the alternatives considered by the National Park Service and dismissed from further analysis. The chapter concludes with summary tables of the three alternative actions and the environmental consequences of implementing those alternative actions.

Chapter 3: Affected Environment describes the areas and resources that would be affected by implementing actions under the alternatives. These include cultural resources, natural resources, visitor use and experience, and socioeconomics.

Chapter 4: Environmental Consequences analyzes the impacts of implementing the alternatives on the impact topics that were identified in chapter 1. Methods used for assessing the impacts in terms of the intensity, type, and duration of impacts are outlined at the beginning of the chapter.

Chapter 5: Consultation and Coordination describes the history of public and agency coordination during the planning effort and lists agencies and organizations that will receive copies of this document.

The **references** at the end include the bibliography, index, and appendixes with supporting information for the document.

BRIEF DESCRIPTION OF THE MONUMENTS

Montezuma Castle National Monument (including Montezuma Well) and Tuzigoot National Monument are NPS units in central Arizona. The monuments are within a 30-minute drive of each other and are managed collectively under a single administrative organization. The Vicinity - Arizona map shows the locations of these NPS units.

Montezuma Castle National Monument

Montezuma Castle National Monument is approximately 3 miles east of I-17 exit 289. The National Monument has a visitor center, a bookstore, and a museum that include exhibits and artifacts depicting the lifestyle, history, and culture of the Sinaguan Indians, who built Montezuma Castle. The Castle itself is not open to the public, but a trail below the Castle offers many panoramic viewpoints. The monument also contains restrooms, a picnic area, and a parking facility for cars and recreational vehicles. Several administrative buildings housing ranger operations are south of the parking facility. Montezuma Well, about 4 miles east of I-17 exit 293, contains a picnic area, restrooms, hiking trails, a visitor contact station, bulletin boards displaying visitor information, a small parking area, and several administrative buildings east of the Back ranch area.

Montezuma Castle National Monument was established in 1906 by Presidential proclamation under the authority of the Antiquities Act. This proclamation and other legal mandates relating to the monuments are provided in appendix A.

The monument preserves a prehistoric structure known as Montezuma Castle, which is a 20-room, five-story cliff dwelling of the prehistoric Sinagua culture. It is one of the best-preserved cliff dwellings in America. The legislation states it “is of the greatest ethnological value and scientific interest” (Presidential Proclamation No. 696, December 8, 1906, 34 Stat. 3265). Subsequent boundary changes are as follows:

- In February 1937, 360 acres of land adjacent to the monument were added, with a subsequent addition of 90 acres, as “required for the proper care, management, and protection of the said prehistoric ruins and ancient cliff dwellings” (Presidential Proclamation No. 2226, February 23, 1937, 50 Stat. 1817).
- In 1959, the boundaries were again enlarged by 42 acres “in order to facilitate the administration and protection” of the monument by an Act of Congress (June 23, 1959, 73 Stat. 108).
- Another boundary change came in 1978 with an Act of Congress to incorporate the adjacent fossil mammal tracks and exclude an area used as right-of-way for the freeway (Public Law 95-625, November 10, 1978, 92 Stat. 3473).
- The boundary was adjusted in December 19, 2003 to further protect the riparian areas of Beaver Creek (Public Law 108-190), increasing the monument area by 157 acres.

Montezuma Well was added in 1943 as a 260-acre detached unit of Montezuma Castle National Monument through an Act of Congress (October 19, 1943, 57 Stat. 572). It preserves an unusual example of a spring-fed, large, limestone sink, plus ruins and sites of prehistoric Hohokam and Sinagua periods and historic Apache sites. In 1959, 17 acres were authorized by an Act of Congress (June 23, 1959, 73 Stat. 108) “to facilitate the administration and protection” of the monument. This land has not been acquired and remains in private ownership.

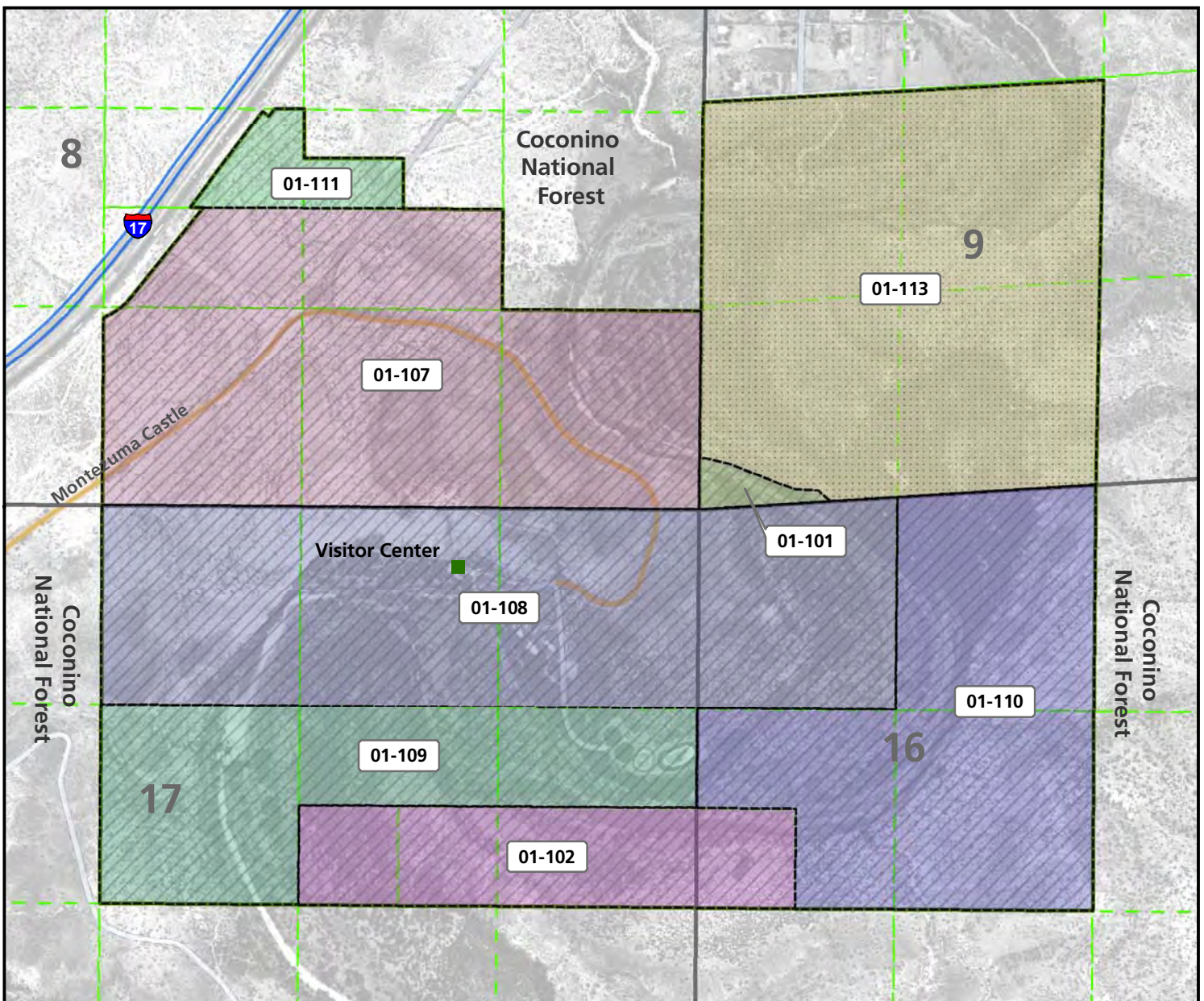
Today, Montezuma Castle National Monument contains 1,004 acres within its boundary. This includes the 727-acre Castle site and the 277-acre Well site. Land ownership and key features within these sites are shown in the following maps:

- Montezuma Castle Site – Parcel Map; and
- Montezuma Well Site – Parcel Map.

Tuzigoot National Monument

Tuzigoot National Monument is approximately 20 miles northwest of I-17 exit 287 (Arizona Highway 260), near the town of Clarkdale, Arizona. Tuzigoot contains a visitor center and museum with a collection of Sinaguan artifacts, a nature trail, restrooms, an administrative building, and a parking facility.

Tuzigoot National Monument was established by Presidential proclamation No. 2344 on July 25, 1939. This proclamation and other legal mandates relating to the monuments are provided in appendix A.



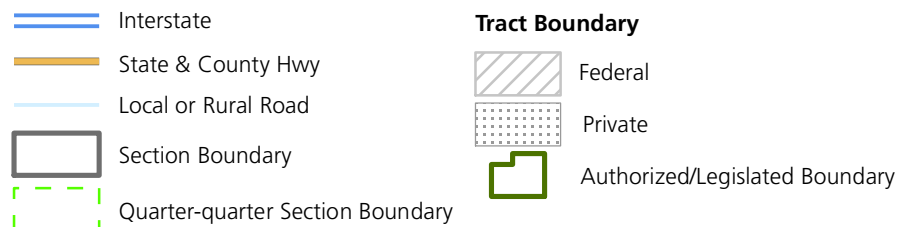
Montezuma Castle Site - Parcel Map

Montezuma Castle National Monument

United States Department of the Interior / National Park Service
DSC - 309 - 20022 - May 2009

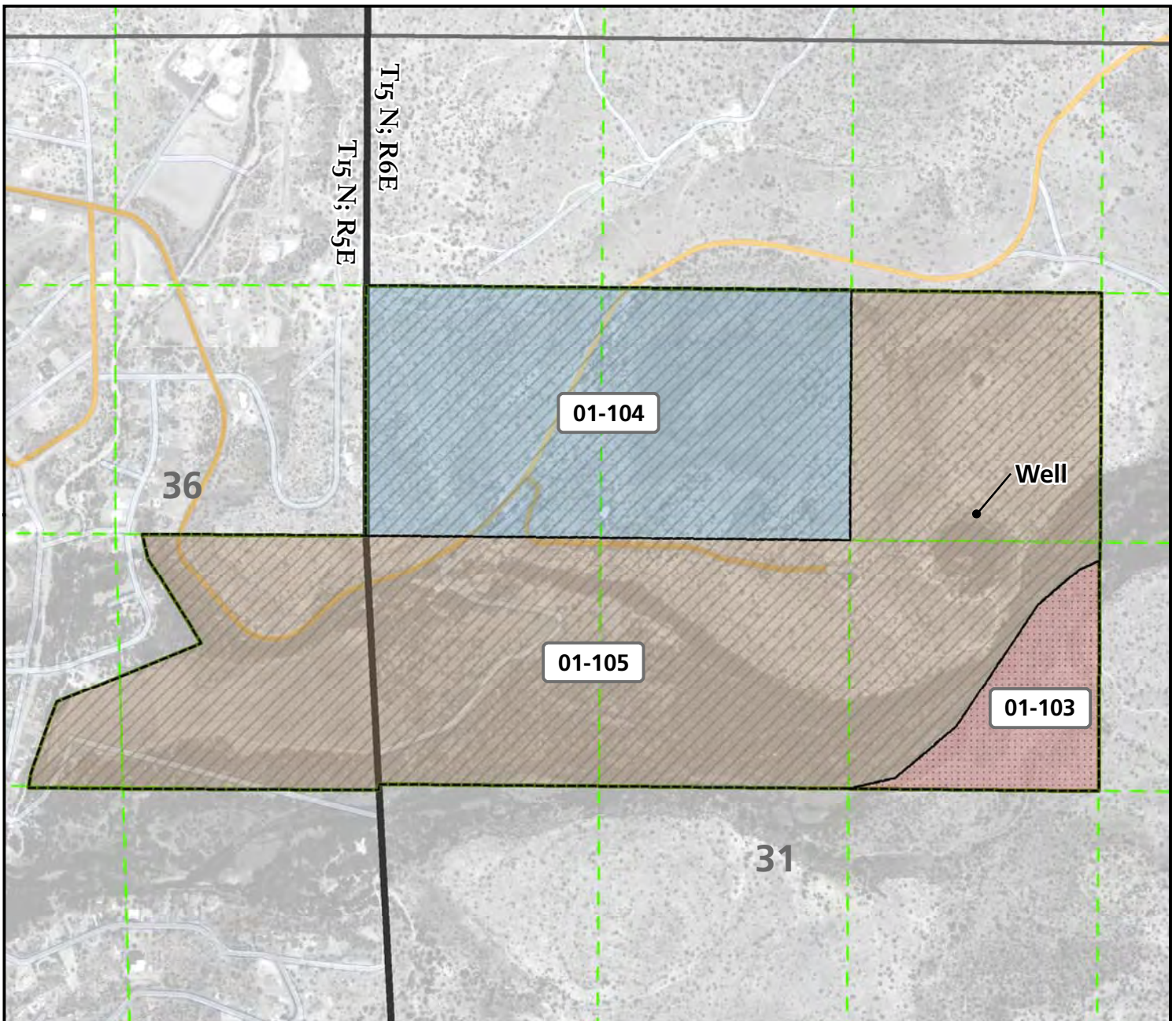
Data Sources:

Tract Boundary: National Park Service, Land Resources Division (10/3/2007)



Tract Register

Tract	Owner	Date	Status	NPS Interest Held	Acreage
01-101	National Park Service	July 1973	Federal	Fee Simple	2.17
01-102	National Park Service	August 1973	Federal	Fee Simple	40
01-107	National Park Service	February 1937	Federal	Fee Simple	360
01-108	National Park Service	December 1906	Federal	Fee Simple	161.41
01-109	National Park Service	February 1937	Federal	Fee Simple	90
01-110	National Park Service	April 1940	Federal	Fee Simple	114.15
01-111	National Park Service	July 1979	Federal	Fee Simple	14.84
01-113	National Park Service	December 2007	Federal	Fee Simple	157



Montezuma Well Site - Parcel Map

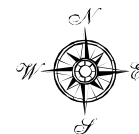
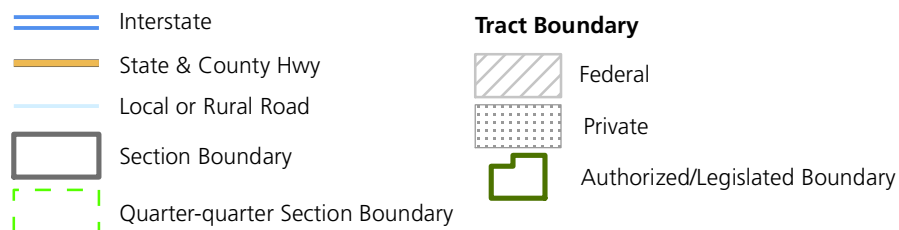
Montezuma Castle National Monument

United States Department of the Interior / National Park Service

DSC - 309 - 20023 - May 2009

Data Sources:

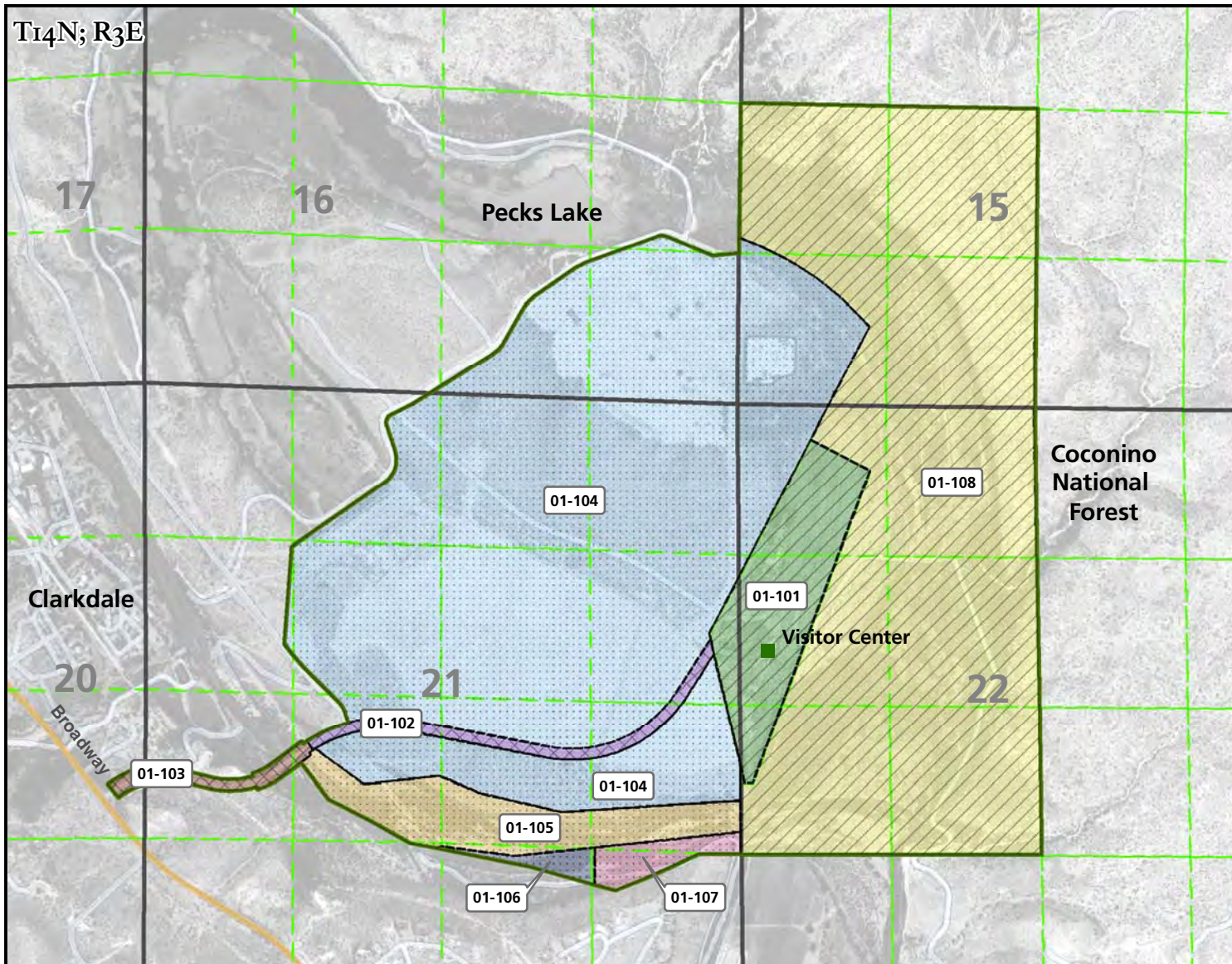
Tract Boundary: National Park Service, Land Resources Division (10/3/2007)



0 0.125 0.25 Miles

Tract Register

Tract	Owner	Date	Status	NPS Interest Held	Acreage
01-103	Private Ownership		Private	Not Aquired	16.83
01-104	National Park Service	April 1947	Federal	Fee Simple	77.74
01-105	National Park Service	April 1947	Federal	Fee Simple	183.6

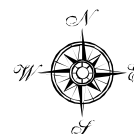
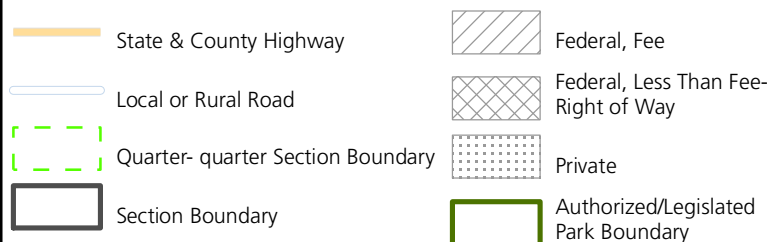


Tuzigoot National Monument - Parcel Map

United States Department of the Interior / National Park Service
DSC - 309 - 20024 - May 2009

Data Sources:

Tract Boundary: National Park Service, Land Resources Division (10/3/2007)



0 0.25 0.5 Miles

Tract Register

Tract	Owner	Date	Status	NPS Interest Held	Acreage
01-101	National Park Service	May 1939	Federal	Fee Simple (Quite Claim from School District No. 39, Yavapai County)	42.67
01-102	National Park Service	December 1965	Federal	Right-of-Way	9.35
01-103	National Park Service	January 1966	Federal	Right-of-Way	5.76
01-104	Phelps Dodge Corporation		Private	Not Aquired	383.43
01-105	State Park Board		State	Not Aquired	35.08
01-106	State Park Board		State	Not Aquired	3.92
01-107	State Park Board		State	Not Aquired	7.93
01-108	National Park Service	2006	Federal	Fee Simple (Donation from Phelps Dodge Corporation)	323.75

The establishing Presidential proclamation states that “certain Government-owned lands [43 acres] in the state of Arizona have situated thereon historic and prehistoric structures and other objects of historic or scientific interest, and . . . it would be in the public interest to reserve such lands as a national monument to be known as Tuzigoot National Monument.” The Tuzigoot National Monument – Parcel Map shows land ownership and key features.

A 15-acre donation easement was added to Tuzigoot National Monument in December 1965 for the entrance road. The Approach Roads Act of January 31, 1931, was the vesting power for this addition.

Public Law 95-625 (November 1978) expanded the boundary of Tuzigoot National Monument by approximately 791 acres. The legislation established an acquisition ceiling of \$1,350,000 and authorized the acquisition of lands within the boundary through purchase, donation, or exchange of other lands administered by the Secretary of the Interior in Arizona.

In December 2005, 324 acres within the expanded boundary were acquired through a land exchange with Phelps Dodge Corporation (now Freeport McMoRan Copper and Gold, Inc.) as mitigation for a mining project. The exchange proposal was made by Phelps Dodge in 1994 and finalized in 2005 when the Bureau of Land Management completed the National Environmental Policy Act process on the mining project. This exchange results in the National Park Service controlling approximately 382 acres of the 791 acres that are within the authorized boundary of the monument.

PURPOSE OF THE PLAN

The approved general management plan will be the basic document for managing Montezuma Castle and Tuzigoot national monuments for the next 15 to 20 years. The purposes of this general management plan are as follows:

- Set forth the basic management philosophy or vision for Montezuma Castle and Tuzigoot national monuments and provide strategies for achieving identified management objectives (“desired future conditions”).
- Clearly define resource conditions and visitor use and experience to be achieved in the monuments.
- Identify the kinds of resource protection, management, use, and development that will be appropriate in achieving and maintaining those conditions.
- Identify future partnerships and collaborative planning efforts that would facilitate the realization of the monuments’ goals.
- Investigate the potential for boundary modifications, establishing the foundation for a subsequent boundary adjustment study.
- Provide a framework for the monuments’ managers to use when making decisions to protect Montezuma Castle and Tuzigoot national monuments’ resources, provide quality visitor use and experience, manage visitor use, and determine the kinds of facilities, if any, to develop in and near the monuments.
- Ensure that the basic foundation for decision-making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action.

Laws that established the National Park Service as an agency and that govern its management provide the fundamental direction for the administration of Montezuma Castle and Tuzigoot national monuments (and other units and programs of the National Park Service). This general management plan builds on these laws and on the legislation that established Montezuma Castle and Tuzigoot national mo-

numents to provide a vision for the monuments' future. The "Guidance for the Planning Effort" provided later in this chapter presents the topics that are important to understanding the management direction at the monuments.

NEED FOR THE PLAN

A general management plan is needed to meet the requirements of the National Parks and Recreation Act of 1978 and NPS policy, which mandate development of a general management plan for each unit in the national park system.

This general management plan for Montezuma Castle and Tuzigoot national monuments is needed because the last comprehensive planning effort for these national monuments was completed in 1975. Since this time, the population of the Verde Valley has increased substantially and continues to grow. This growth has resulted in changes in land use near the monuments. Visitation to the monuments also has increased over the past 30 years, although some declines have occurred within the past decade. Each of these changes has major implications for visitor expectations, how visitors access and use the monuments, facilities needed to support visitor uses, how resources are managed and protected, and how the National Park Service conducts its operations.

This general management plan represents a commitment by the National Park Service to the public on how the monuments will be used and managed. As such, it is intended to confirm the mission, purpose, and significance of Montezuma Castle and Tuzigoot national monuments.

The general management planning process is used to determine the best mix of resource protection and visitor use beyond what is prescribed by law and policy. This mix is based on the purpose for and significance of the monuments, the range of public expectations and concerns, and the natural and cultural re-

sources in the monuments. The process also considers the impacts of the alternatives on the natural, cultural, and socioeconomic conditions; on visitor use and experience; and on long-term economics and costs.

The plan defines desired conditions that implement the goals of the National Park Service and the public with regard to natural and cultural resource management and protection and visitor use and experience. It also defines facilities that are appropriate within each management prescription.

In the alternatives, the plan will determine the areas to which resource protection and desired visitor use conditions should be applied to achieve the management goals of the monuments. It also serves as the basis for later, more detailed implementation plans, which will tier from the general management plan.

ESTABLISHMENT AND ADMINISTRATION OF MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

Increasing Euro-American use of the Verde Valley led to disturbance or destruction of many archeological resources during the late 19th and early 20th centuries. Early settlers often robbed ruins for stone, built over ruins, and reused prehistoric canals. The first building constructed in the original farming community in the valley was constructed in a Sinagua ruin. Later, ranchers, tourists, and others obtained relics and artifacts for private collections from the ruins and burial sites.

Montezuma Castle National Monument

The name of Montezuma Castle came from early settlers who marveled at the structure and mistakenly thought that it was Aztec in origin. During the late 19th century, investigators explored and studied Montezuma Castle. Their published findings drew increasing public attention

to the ruins. In 1875, William C. Manning published an article in *Harper's New Monthly Magazine* that described Montezuma Castle, though not by name. Ladders leading to the ruins were already in place, and Manning noted 10 to 12 inches of "bat lime" on room floors from which he and his companions removed pot sherds.

From 1884 to 1886, Dr. Edgar A. Mearns, an army surgeon stationed at Fort Verde, was the first Euro-American to conduct serious study of the ruins. He collected artifacts at the site and apparently placed some objects in the collections of the American Museum of Natural History in New York. In an 1890 article in *The Popular Science Monthly*, Mearns published a description of the Castle, including ground plans and descriptions of some rooms and features.

In 1897, the Arizona Antiquarian Association raised \$150 from private sources to undertake the first repair and stabilization of some of the ruins' walls under the leadership of Dr. Joshua Miller of Prescott, the association's first president. Although no settlers occupied the land, many people visited the Castle during the late 1890s and early 1900s, and traffic through the ruins left its mark.

In 1888, William B. Back moved with his family on to what would later become known as the Montezuma Well property, irrigating crops by using the lime-coated prehistoric ditches built by the Sinagua. Back built structures on the property, including the family home, a log smokehouse, and a blacksmith shop and a pig pen in an alcove. Back's homestead entry was patented on July 18, 1907, and by 1910 he was operating Montezuma Well as a tourist attraction. After Back died in 1929, William Back Jr. moved to the Montezuma Well property with his wife, and constructed a stone museum to house the numerous artifacts that the family had taken from ruins surrounding Montezuma Well.

Establishment and Boundary Changes. By Presidential Proclamation 696 [34 Stat. 3265], President Theodore Roosevelt established Montezuma Castle as a national monument on December 8, 1906, as authorized under the Antiquities Act of June 8, 1906. The proclamation stated that the Castle, one of the best-preserved prehistoric cliff dwellings in the United States, was "of the greatest ethnological value and scientific interest."

On February 23, 1937, Presidential Proclamation 2226 (50 Stat. 1817) added 360 acres of government land to the original 160-acre national monument as "required for the proper care, management, and protection of the said prehistoric ruins and ancient cliff dwellings."

An Act of Congress (57 Stat. 572) on October 19, 1943, authorized purchase of the 180-acre Well site, 4.5 miles northeast of the Castle along the banks of Wet Beaver Creek (a tributary to Beaver Creek). The purpose of this action was to preserve an unusual example of a spring-fed, large, natural limestone sink as well as ruins and sites associated with the Hohokam and Sinagua cultures and historic Apache sites. The legislation established Montezuma Well as a detached unit of the Montezuma Castle National Monument and included the transfer of 77.74 additional acres from Coconino National Forest to the monument to facilitate administration of the Montezuma Well site. However, funds for the purchase of the Montezuma Well property were not appropriated until passage of the Interior Appropriation Bill for Fiscal Year 1947. On March 3, 1947, the property passed into federal ownership.

On June 23, 1959 (73 Stat. 108), 17 acres were added to the Montezuma Well site and 42 acres were added to the Castle site to "facilitate the administration and protection" of the monument.

A land exchange between Coconino National Forest and the National Park Service on November 10, 1978 (Public Law 95-625; 92 Stat. 3473), resulted in a net

increase of approximately 18 acres of land to the national monument. This included about 13 acres that contained the fossilized footprints of Pliocene mammals, including mammoth, three-toed tapir, cat, and camel. Approximately 5 acres were deleted for use as a right-of-way for Interstate Highway 17.

On December 19, 2003, Public Law 108-190 expanded the national monument's boundaries by adding 157 acres of adjacent land to protect important riparian values along Beaver Creek and to preserve the scenic backdrop for the national monument.

National Park Service Administration.

In its early years, the monument was subject to inconsistent supervision, inadequate management, unanswered requests for better funding, and continued damage to the its prehistoric ruins. However, during this time, some improvements were made by Martin L. Jackson, a local settler who resided on his family's homestead several miles from the Castle. Jackson contracted with the National Park Service to construct a lower trail, which led from the campground at the base of the Castle to the Castle itself; an upper trail, connecting the top of the cliff and the Castle; and a drainage ditch on the cliff above the Castle. In addition, Jackson improved the two rough roads that provided access to the monument from the nearby highway.

In 1921, Jackson was appointed by the National Park Service as the national monument's first part-time custodian. Frank Pinkley, who would serve as superintendent of the southwestern national monuments from 1923 to 1939, agreed to oversee Jackson's supervision of the site, including semiannual trips to the national monument to assist with larger ruins repair and stabilization projects.

During 1923 to 1925, the two men, along with a hired crew, repaired and replastered the front wall of the lower two-thirds of the Castle, strengthened the "addition" section, stabilized parts of the cliff

ledges, repaired damaged wall and floor sections throughout the structure, restored doorways and lintels, rebuilt portions of the roof, and cleaned out the interiors of the front room. They also removed the disfiguring corrugated iron roof installed by the Arizona Antiquarian Association in 1897, and scrubbed off hundreds of names written on the Castle's walls.

During 1926 to 1927, Martin Jackson and his son Earl (who would be hired as a seasonal ranger in 1928 and later was the first full-time employee of Montezuma Castle National Monument) constructed the first ranger cabin and dug the first well at the national monument. The Jacksons also built a new campground and picnic area and set up a display in the cabin for artifacts recovered during their annual cleaning and repair projects of the ruins. In September 1928, Martin Jackson became the full-time custodian of the monument, and he continued in that position until 1937. The Jacksons built a new structure, and fashioned the east end of the building below their residence into a concession shop. Beginning in the 1930s, the National Park Service began hiring seasonal rangers to help with the growing numbers of summer visitors to the national monument.

Earl Jackson received graduate training at the University of Arizona and later became an NPS archeologist and replaced his father as full-time custodian of the national monument. From 1937 to 1943, Earl Jackson conducted an archeological survey of the middle Verde River drainage area for his master's thesis. In 1933 and 1934, Earl, along with Sallie Pierce Van Valkenburgh, excavated Castle A in the national monument using Civil Works Administration funding. Recovered remains included intact vessels, pottery sherds, stone tools, textiles, and grinding slabs. Food remains included corncobs and husks, plant stems, seeds, beans, and deer and antelope bones. Artifacts of

wood, bone, horn, leather, shell, and turquoise were found, as were 28 burials.

Using funds and labor provided by New Deal public works agencies, the National Park Service implemented major improvements at Montezuma Castle during the Great Depression, transforming it into a “first-rate monument.” New facilities were constructed to accommodate the ever-increasing number of visitors, a variety of interpretive and educational programs were developed, and preservation activities, including expanded ruins stabilization and repair projects, ensured protection of the monument’s cultural resources. Projects at the national monument during 1933 and 1934 included:

- A new parking lot that left clear the “sacred area” in front of the Castle.
- A rubble revetment to protect the enlarged picnic grounds and Sycamore Trail from frequent Beaver Creek flooding.
- A cleared space for a new campground.
- Reconstruction and repair of the entrance road.
- A flagstone trail connecting a light plant engine and a 2000-watt generator to the museum and ranger’s residence.
- A rustic stone garage and shed for storage of a government car and monument supplies.
- A septic tank and sewer line.
- An interpretive trail passing in front of the Castle cliff and Castle A ruins.
- Installation of a telephone box.

In 1939, two new rustic Pueblo-style adobe (with stucco coating) residences were constructed to provide living quarters for the families of the custodian and ranger, and the former custodian’s residence was converted into needed office and museum space. The next few years saw the completion of other projects, in-

cluding a new campground and picnic area along Beaver Creek, a boundary fence to keep stray cattle out of the monument, a new electrical system, a raised section of revetment wall along Beaver Creek, and an improved entrance road and new roads connecting the campground and residence areas.

After World War II, existing buildings on the Montezuma Well site were repaired and modernized. The former Back cabin was rehabilitated, two guest houses were adapted for storage space and a car stall, the stone museum building was rehabilitated for new exhibits, a new well and pump were developed to provide domestic water, and tillable land was leased to the Montezuma Dairy Company for production of forage crops. Other structures in the Montezuma Well site, including a shed, barn, chicken coop, and privy, were torn down.

The cliff dwelling ruins were closed to the public in 1951, but increasing numbers of visitors continued to make it one of the most-visited prehistoric southwestern ruins in the United States. Thus, the National Park Service made extensive improvements to the national monument facilities from 1957 to 1960 as part of its Mission 66 program. These projects included:

- Construction of a visitor center, including space for administrative offices and museum exhibits.
- Construction of a three-unit apartment complex adjacent to the two rustic adobe residential structures.
- Improvement and enlargement of the monument’s water, sewer, and electrical systems.
- Development of a new well and storage tank.
- Improvement and development of new roads and trails, an enlarged parking area, and new landscaping.

- Construction of two new residences at the Montezuma Well site.

A shelter was constructed over and around the pit house excavated by Dale Breternitz, curator of anthropology at the University of Northern Arizona, along the Montezuma Well site entrance road in 1958. In 1960, seven of the nine rooms in the Swallet Cave ruin, inside the Montezuma Well rim, were excavated by monument archeologist Edmund J. Ladd.

Tuzigoot National Monument

Early investigators in the Verde Valley probably knew of the Tuzigoot ruins, but they were not officially recorded until 1933. In that year, the Archaeological Committee of the Yavapai County Chamber of Commerce at Prescott sought to provide prehistoric materials for display at the Smoki Museum in Prescott, and chose Tuzigoot as a promising site for excavation.

In 1933 and 1934, the site was excavated and partially stabilized by Louis R. Caywood and Edward Spicer under the guidance of Dr. Byron Cummings of the University of Arizona using funds provided by the Federal Emergency Relief and Civil Works Administrations. The project resulted in the nearly complete excavation of the pueblo, including 86 ground floor rooms, three refuse areas, and 411 burials (429 individuals). In 1934, Caywood and Spicer reburied nearly all of the Tuzigoot skeletal remains in the slope below the prehistoric pueblo close to the original cemetery. Less than 10% of the osteological remains were placed in archeological storage.

Caywood and Spicer named the pueblo “Tuzigoot,” the Tonto Apache name for Peck’s Lake that means “crooked water.” After the excavation, four rooms in the Group 4 room block were reconstructed, but were later dismantled to their post-excavation condition. Caywood and Spicer also apparently directed the excavation of portions of the Tuzigoot Extension

Ruin on the ridge across the Verde River south of Tuzigoot and the Hatalacva Pueblo west of Tuzigoot, but records of these activities, other than a few photographs, have not been found.

In 1935 and 1936, the Works Progress Administration (WPA) provided funding for construction of a rustic stone Pueblo-style museum building adjacent to the ruins to house and exhibit the artifacts recovered during the excavation. A stone veneer storage tool house, pump house, and retaining wall built of local river rock were constructed as support facilities.

At the time, the museum building was on land owned by the Phelps Dodge Corporation (now Freeport McMoRan Copper and Gold, Inc.). The corporation deeded the land to School District 29, which in turn transferred the land to the federal government.

President Franklin D. Roosevelt on July 25, 1939, via Presidential Proclamation No. 2344, established Tuzigoot National Monument to preserve “historic and prehistoric structures and other objects of historic or scientific interest.” The monument initially included about 43 acres and was set aside to preserve the pueblo, “one of the largest in the area.” The museum, which is one of the few original national monument visitor centers still in use in the southwestern United States, was included in the parcel and was originally staffed by a custodian furnished by the Phelps Dodge Corporation.

Expansion of the national monument occurred in December 1965 when a 15.1-acre donation easement was added to provide a right-of-way for construction of a new approach road.

While cultural resource preservation was the primary impetus for establishing Tuzigoot National Monument, the importance of preserving the natural setting of the monument also was recognized. To achieve that objective, Public Law 95-625 (November 10, 1978) expanded the boundaries of the national monument to in-

clude approximately 791 additional acres and authorized the acquisition of lands within the expanded boundary through purchase, donation, or exchange of other lands in Arizona administered by the Secretary of the Interior.

In December 2005, the National Park Service acquired more than 40% of the area within the expanded boundary through a land exchange with Phelps Dodge Corporation. In an action that involved these two entities and the Bureau of Land Management, 324 acres within the expanded boundary were transferred to NPS ownership as part of the mitigation for a mining project at another location.

Freeport McMoRan Copper and Gold, Inc. continues to own about 375 acres within the expanded boundary of Tuzigoot National Monument. The National Park Service will continue to work cooperatively with Freeport McMoRan. to maintain the resources that caused Congress to include the land in the monument boundary.

A tract of 47 acres within the 1978 boundary expansion is owned by the state of Arizona and managed by Arizona State Parks. This parcel includes Verde River frontage and is part of the Verde River Greenway, a unit of Dead Horse Ranch State Park.

Stabilization has been ongoing at the Tuzigoot Pueblo since the national monument was established. This work has consisted mostly of maintenance and small stabilization jobs carried out by monument staff, but it also included four major stabilization projects between 1940 and the late 1960s. Stabilization work resulted in repairs throughout the pueblo and also uncovered an occasional undisturbed burial or pot cache, indicating that undisturbed deposits still remain.

During the Mission 66 program, the National Park Service constructed a modern triplex residence at the national monument to provide employee housing.

GUIDANCE FOR THE PLANNING EFFORT

MISSION STATEMENT

The mission of the National Park Service is to preserve, protect, and interpret the structures, objects, and other remnants of the prehistoric cultures at Montezuma Castle and Tuzigoot national monuments, and to perpetuate the cultural and natural landscapes associated with those cultures.

PURPOSE AND SIGNIFICANCE

Purpose statements reaffirm the reasons for which the monuments were set aside as units of the national park system and provide the foundation for management and use of the monuments. The statements are based on the monuments' legislation and legislative history and on NPS policies.

Purpose

The purposes of Montezuma Castle and Tuzigoot national monuments are to:

- Preserve and manage prehistoric and historic structures and their related resources within Montezuma Castle, Montezuma Well, and Tuzigoot.
- Protect and manage ecological processes and conditions related to the mix of desert and riparian habitats to maintain sustainable cultural and natural landscapes.
- Promote stewardship through education and interpretation of continuing cultural adaptations to a desert environment.
- Provide opportunities for the exploration of appropriate ethnological and scientific interests.

Significance

Significance statements build on the monument's purpose and clearly state why, within a national context, the monument's resources and values are important

enough to warrant the designation as a national park unit. These statements identify the resources and values central to managing the area and express the importance of the area to our natural and cultural heritage.

The primary significance of Montezuma Castle National Monument and Tuzigoot National Monument is summarized as follows:

- Montezuma Castle is the largest, most accessible, and best-preserved Sinaguan cliff dwelling in the Southwest.
- Tuzigoot is one of the largest known pueblos of Sinaguan origin and serves as a benchmark of the Tuzigoot Phase of the archeological record.
- The excavation, restoration, and development of Tuzigoot illustrate Depression-era (Civilian Works Administration, Works Project Administration, and Civilian Conservation Corps) pioneering archeological efforts in the Southwest and were instrumental in the preservation and accessibility of this and other national monuments.
- The monuments' archeological collections constitute one of the largest artifact assemblages, including trade ware, of the Southern Sinagua culture of the Verde Valley.
- Montezuma Well is a unique, spring-fed, limestone sink connected to remnants of an extensive prehistoric irrigation system via a natural outlet.
- Because of its unique environment, Montezuma Well has substantial scientific value and contains species not found in any other waters in the world.
- The monuments preserve a mixture of riparian and desert landscapes that sustains a diverse ecological system. This system supports life on a local,

national, and global scale by providing migratory routes and important habitat.

- The monuments represent a continuum of land use from pre-Columbian cultures through the present and have enormous learning potential about the relationship between humans and their environment.
- The natural and cultural resources within the monuments are significant to native tribes, as evidenced by oral histories, the archeological record, and continuing practices and beliefs. To this day, eight tribes maintain an affiliation with the monuments.
- Montezuma Castle was among the first four national monuments created through the Antiquities Act of 1906, affording the first federal protection of archeological resources.

FUNDAMENTAL RESOURCES AND VALUES

Fundamental resources and values are monument's attributes – its features, systems, processes, experiences, stories, scenes, sounds, smells, opportunities for visitor enjoyment, or others – that are critical to achieving the monument's purpose and to maintaining its significance. Other important resources and values are the other monument attributes that are important but not related to the monument's purpose and significance. This section describes the fundamental resources and values and other important resources and values of the Montezuma Castle and Tuzigoot national monuments. The fundamental resources and values warrant primary consideration during planning and management or are important to monument management and planning.

The fundamental resources and values are grouped into three categories: cultural connectivity, structures and related resources and values, and natural features.

Cultural Connectivity

This category lists the fundamental resources and values that support an understanding of the monuments' role within larger geographic networks of exploration, settlement, resource development, and trade from prehistoric time to today. The fundamental resources and values in this category also support an understanding of continuing cultural adaptation to the desert environment.

- The vistas at the monuments that allow visitors to experience and understand the line-of-sight relationships among the prehistoric pueblos that were regularly spaced, approximately 1.8 miles apart, along the major drainages of the Verde Valley. The vistas make it possible to see the following pueblos: Sacred Mountain (Well), Thoeny (Well), the Salt Mine Pueblo (Castle), Bridgeport Pueblo (Tuzigoot), the Tuzigoot Extension (Tuzigoot), and Hatalacva (Tuzigoot).
- The connection of structures within the monuments boundaries that reveal patterns in prehistoric land use and the related opportunity to contrast the similarities and differences in land use to man's relationship with the environment from prehistoric to modern times.
- The resources and opportunities to understand the role of the Verde Valley as a major trading hub and an exporter of argillite, salt, and copper derivatives.
- The stories, oral histories, and resources revealing the role of the Verde River, Montezuma Well, Tavasci Marsh, Beaver Creek, and Wet Beaver Creek in prehistoric and historic trade, travel, exploration, and settlement of the area.

Structures and Related Resources and Values

This category lists the fundamental resources and values that support preservation and understanding of the prehistoric and historic structures and related resources and values of the monuments.

Montezuma Castle. The prehistoric Sinagua structures and related resources of the Castle, including four cliff dwellings and five rockshelters on the limestone face of the north bank of Beaver Creek, three agricultural sites evidenced by small stone structures in the floodplain of Beaver Creek, one or two room masonry structures, a bedrock mortar site southeast of the Castle in the inner channel of Beaver Creek, and two lithic scatter sites above the Castle and between the Castle's access road and Highway 17.

The high degree of architectural integrity of the Castle cliff dwelling including the boulder/adobe-and-cobble masonry building construction, viga-and-latilla roof construction, and the three-sided alcove niche carved into the limestone cliffs sheltering the cliff dwelling.

Montezuma Well. The prehistoric Hohokam and Sinagua and historic Apache structures and related resources, including 22 rockshelters sites within the inside rim of Montezuma Well and the limestone cliffs overlooking arable land or prehistoric irrigation ditches, two pueblos sites on the south rim of Montezuma Well, several one or two room masonry structures, agricultural features including well-preserved segments of a prehistoric irrigation canal system, artifact scatters, a burial ground, and a prehistoric cobble concentration at the edge of a cliff overlooking the irrigation canal.

Tuzigoot. The prehistoric Sinagua structures and archeological evidence used to understand the sociopolitical organization of this large cluster settlement, including Tuzigoot Pueblo on the crest of Tuzigoot

Hill and the site of a two-to-five-room masonry structure on the eastern slope of Tuzigoot Hill.

Natural Features

This category lists the fundamental resources and values that support protection and understanding of the significant natural features and ecological processes of the monuments.

- The unique hydrology and geology of the monuments, including the spring-fed, large, limestone sink of Montezuma Well; the spring-fed Tavaschi Marsh draining onto the fields below; the limestone formations of the monuments; Beaver Creek; Wet Beaver Creek; and the Verde River.
- Special species at Montezuma Well, including *Kinosternon sonoriense* (Sonoran mud turtle), *Hyaella montezuma* (Amphipod), and *Erpobdella montezuma* (leech).
- The ecological processes and conditions related to the integration of desert and riparian landscapes.

Other Important Resources and Values

The monuments also have the following noteworthy resources and values that are less than "fundamental, but that remain important.

For cultural connectivity, these include partnerships with tribes, adjacent land owners, and local private and public agencies.

Additional, important structures and related resources and values include the structures (museum and offices, storage tool house, pump house, and retaining wall) and pioneering archeological technologies developed at Tuzigoot by the Works Progress Administration and Civilian Conservation Corps. They also include structures and site features associated with 19th century homesteading activities, including the Back cabin, the

smokehouse structure, and irrigation ditch.

Additional, important natural features include:

- The function of the Verde River, Beaver Creek, and Wet Beaver Creek as wildlife corridors and habitat for birds and mammals;
- Mesquite bosques found at the Montezuma Well and Tuzigoot sites;
- The night sky vistas at the Montezuma Well and Castle sites; and
- Open space for recreation at Montezuma Well.

OBJECTIVES

Objectives are the specific, measurable goals that Montezuma Castle and Tuzigoot national monuments will use to manage and preserve their resources.

Cultural and Natural Resources

Implement resource management activities to improve resource conditions and protect the fundamental resources and values of the monuments.

Provide monument facilities and use them in a manner that minimizes adverse impacts on cultural and natural resources.

Visitor Use and Experience

Provide improved connections between the three sites including information, orientation, and wayfinding.

Provide interpretive and education opportunities that improve visitor understanding and appreciation of the purpose, significance, and fundamental resources and values of the monuments.

Monument Operations

Improve efficiency and effectiveness in all divisions and functions of monument operations.

Partnerships

Establish and maintain partnerships to improve visitor orientation to the sites and other opportunities adjacent to the monuments and elsewhere in the Verde Valley.

Establish and maintain effective partnerships and collaborative planning efforts that facilitate the realization of the monuments' goals.

PRIMARY INTERPRETIVE THEMES

Primary interpretive themes are the key ideas through which the monuments' resource values are conveyed to the public. They connect monuments' resources and values to the purpose and significance, providing the building blocks on which the interpretive program is based. The primary interpretive themes for Montezuma Castle National Monument and Tuzigoot National Monument are the following:

- Land use patterns and human settlement of the Verde Valley illustrate the continuum of occupation in the Southwest and demonstrate how contemporary cultures are linked to, and identify with, this place.
- Riparian areas of the Verde Valley support a diversity of plants and animals and serve an important role in scientific discovery and species survival as habitat is lost to development worldwide.
- Montezuma Castle and Tuzigoot national monuments serve as benchmarks of pioneering archeological efforts in the Southwest and demonstrate evolving scientific inquiry, methods, and interpretations that help us understand past human experiences and how they inform the present.
- The experiences of people in the Verde Valley demonstrate how, through migration, travel, and trade

along natural corridors, cultures influence and affect one another.

- The preservation and interpretation of Montezuma Castle and Tuzigoot national monuments illustrate the National Park Service mission of protecting exemplary sites that contribute to our national identity while providing authentic places and experiences for people to connect to their heritage.

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

Special mandates and administrative commitments refer to monument-specific requirements. These formal agreements are often established concurrently with the creation of a unit of the national park system. These include the following:

- The Beaver Creek Road crosses through the Montezuma Well site of Montezuma Castle. This road is on federal land but is maintained by Yavapai County. The National Park Service and the county work collaboratively to ensure that this road is maintained for public transit.
- The National Park Service has a partnership with Western National Parks Association to manage the sales of interpretation-related merchandise, such as books, at the Montezuma Castle and Tuzigoot visitor centers. This partnership is governed by the laws of the state of Arizona and NPS policy. The sale of merchandise provides a service to visitors and provides funds for management of the monuments.

SERVICEWIDE MANDATES AND POLICIES

To understand the implications of an alternative, it is necessary to combine the alternative's management actions with servicewide mandates and policies. This section identifies actions at Montezuma Castle and Tuzigoot national monuments

that are needed to comply with federal laws and NPS policies.

Many management directives are specified in laws and policies guiding the National Park Service and, therefore, are not subject to alternative approaches. For example, there are laws about managing environmental quality (such as air quality, threatened and endangered species, and wetlands), laws governing the preservation of cultural resources (such as the National Historic Preservation Act), and laws about providing public services (such as barrier-free access). A general management plan is not needed to decide, for example, that it is appropriate to protect endangered species, control exotic species, protect archeological sites, conserve artifacts, and provide access to people with impaired mobility.

The NPS Organic Act (16 *United States Code*, section 1) provides the fundamental management direction for all units of the National Park Service. In this act, the National Park Service is charged to

Promote and regulate the use of the Federal areas known as national parks, monuments, and reservations... by such means and measure as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life 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.

The National Park System General Authorities Act (16 *United States Code*, section 1a-1 *et seq.*) affirms that while all national park system units “though distinct in character, are united through their inter-related purposes and resources into one national park system as cumulative expressions of a single national heritage.” The act makes it clear that the NPS Organic Act and other protective mandates ap-

ply equally to all units of the system. Further, it states that NPS management of park units “shall not be exercised in derogation of the values and purposes for which these various areas have been established.”

The NPS Organic Act and the General Authorities Act prohibit any impairment of monument resources. Therefore, chapter 4 of this general management plan includes determinations of whether the actions associated with the alternatives would result in impairment of the resources that collectively compose the monuments’ “scenery and the natural and historic objects and the wild life therein.”

Unless an activity is required by statute, the National Park Service cannot allow visitor uses in the monuments that would involve or result in any of the following, which are listed in section 8.2 of *Management Policies 2006* (NPS 2006):

- Be inconsistent with a park’s purposes or values.
- Impede the attainment of a park’s desired conditions for natural and cultural resources as identified through the park’s planning process.
- Create an unsafe or unhealthy environment for visitors or employees.
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values.
- Unreasonably interfere with
 - park programs or activities,
 - an appropriate use,
 - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park, or
 - NPS concessioner or contractor operations or services.

The National Park Service has established policies for all units under its stewardship. These are identified and explained in the guidance manual, *Management Policies 2006* (NPS 2006). All of the alternatives considered in this general management plan, including the no-action alternative, incorporate and comply with the provisions of these mandates and policies.

GUIDING MANAGEMENT PRINCIPLES AND STRATEGIES

Guiding management principles and strategies shape the ways that monument staff manage the fundamental resources and values, within the limitations imposed by servicewide and special mandates, to preserve the monuments’ significance, fulfill the monuments’ purpose, and achieve the monuments’ mission. These principles and strategies would guide management under all three alternatives described in this document.

Some of these principles and strategies describe approaches that the monuments are currently taking; others are not currently being implemented but are consistent with NPS policy and are not controversial. As appropriate, the National Park Service would provide National Environmental Policy Act and National Historic Preservation Act compliance documentation for the implementation of actions under these principles and strategies and of actions taken under the selected alternative.

Manage and Protect Cultural Resources

The protection of cultural resources is essential for understanding the past, present, and future relationship of people with the area. Montezuma Castle and Tuzigoot national monuments are part of the NPS Vanishing Treasures Initiative, which provides emergency measures to protect structures in imminent danger, evaluates structures to determine treatment priority, and trains a younger workforce in the

craft skills needed for archeological preservation. The strategies identified below will enable the National Park Service to preserve unimpaired the monuments' cultural resources while encouraging visitors and employees to understand and appreciate their value.

Archeological, Historic Structures, Cultural Landscapes, and Ethnographic Resources. The strategies for managing these resources will be as follows:

- Continue to survey and document or inventory cultural resources in accordance with the National Historic Preservation Act and other applicable regulations and policies.
- Gather field data regarding archeological resources to develop a more accurate predictive model of prehistoric site distribution and address related research questions.
- Continue to evaluate all identified resources to determine their eligibility for listing in the National Register of Historic Places.
- Use avoidance techniques and other measures to prevent impacts on known significant sites from visitors and project-related disturbances.
- Continue to support research and consultation to increase the understanding of all cultural resources.
- Consistent with Director's Order 75A, continue to consult with and seek to improve working relations with federally recognized tribes and the state historic preservation officer on surveys, studies, excavations, and actions that potentially could affect cultural resources.
- Continue the preservation and stabilization of prehistoric and historic structures when necessary.

Museum and Archival Collections. The strategies for managing museum and archival collections will be as follows:

- Continue to maintain a diverse museum collection according to NPS policies. While the collection will continue to contain primarily archeological artifacts and archival documents, managers should look for opportunities to expand holdings of ethnographic, historic biological, paleontological, and geological specimens.
- Continue to improve the conditions of artifact and specimen exhibits and storage according to NPS museum standards.
- Maintain and continue to expand opportunities for researchers to use the artifacts, specimens, and archival materials in the museum collection.

Relationships with Native Americans.

The National Park Service recognizes that the monuments have long occupied a prominent position for Native Americans in the Verde Valley. NPS staff members will work to ensure that traditional Native American ties to the monuments are recognized and will strive to maintain positive, productive government-to-government relationships with tribes that are culturally associated with the monuments. The viewpoints and needs of tribes will continue to be respected, and issues that arise will be promptly addressed. Native American values will be considered in the management and operation of the monuments. To enhance its relationship with the tribes, the National Park Service will carry out the following strategies and actions:

- Consult regularly and maintain government-to-government relations with federally recognized tribes that have traditional ties to resources within the monuments to ensure productive, collaborative working relationships.
- Continue to identify and deepen the understanding of the significance of the monuments' resources and landscapes to Native American people

through cooperative research and sharing.

- Once they have been identified, protect and preserve the sites, resources, landscapes, and structures of significance to the federally recognized tribes as required under federal laws and *Management Policies 2006* (NPS 2006).
- Encourage the participation of tribes in protecting the monuments' natural and cultural resources of interest and concern to them.
- Involve tribes in the monuments' interpretation program to promote accuracy of information about Native American cultural values and enhance public appreciation of those values.
- Support the continuation of traditional Native American activities in the monuments to the extent allowed by applicable laws and regulations.
- Continue to consult and collaborate with tribes concerning issues and proposed actions that might affect Native Americans.

Manage and Protect Natural Resources

The protection, study, and management of the monuments' natural resources and processes are essential for achieving the monuments' purposes and mission goals. The following principles and strategies will help the National Park Service retain the ecological integrity of Montezuma Castle and Tuzigoot national monuments, including natural resources and processes. These actions will help ensure that the monuments' natural features are unimpaired; the areas continue to be dynamic, biologically diverse environments; and the monuments are recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use.

Inventory and Monitoring. Knowing the condition of natural resources in a nation-

al park unit is fundamental to the National Park Service's ability to protect and manage that unit. Montezuma Castle and Tuzigoot national monuments are confronted with increasingly complex and challenging issues, and the National Park Service needs scientifically credible data to make management decisions. Inventories involve compiling existing information and collecting new information. Inventories contribute to the accurate statement of the condition of the monuments' resources, especially the natural or unimpaired state.

A long-term ecosystem monitoring program is necessary to enable managers to:

- Make better informed decisions;
- Provide early warning of changing conditions in time to develop and implement effective mitigating measures;
- Persuade individuals and other agencies to make decisions benefiting the monuments;
- Satisfy certain legal mandates;
- Provide reference data for relatively pristine sites for comparison with areas outside the monuments; and
- Evaluate the effectiveness of management actions and obtain more accurate assessments of progress towards management goals.

Using monitoring information will increase confidence in managers' decisions and improve their ability to manage natural resources.

Strategies for inventorying and monitoring include the following:

- Continue to develop inventories and long-term monitoring programs to address the status and health of the resources. Identify key indicators of resource or ecosystem conditions and monitor them over the long term to record changes in ecosystem health.
- Conduct inventories to identify vertebrate and invertebrate animal species,

vascular and nonvascular plant species, and air, water, and geologic resources in the monuments.

- Continue to participate in the Sonoran Desert Inventory and Monitoring Network. Work with partners and collaborators to inventory resources and monitor vital components of the ecosystem. This will make it possible to better assess the condition of monuments' resources and trends and to develop databases, data analyses, and retrieval tools so that the usefulness of natural resource information can be improved.

Air Quality. Montezuma Castle and Tuzigoot national monuments are designated class II areas under the Clean Air Act. The National Park Service has a responsibility to protect air quality under both the 1916 Organic Act and the Clean Air Act. Accordingly, the National Park Service will seek to achieve the best possible air quality in the monuments to (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas.

Vegetation, visibility, water quality, wildlife, historic and pre-historic structures and objects, cultural landscapes, and most other elements of the monuments' environment are sensitive to air pollution. The National Park Service will actively promote and pursue measures to protect resource from the adverse impacts of air pollution.

The National Park Service will use the following strategies to address air quality in the monuments:

- Eliminate or reduce emissions associated with administrative and recreational use of the monuments.
- Continue to participate in regional air quality planning and research, and the implementation of air quality standards.

- Protect the monuments' noteworthy night sky and scenic vistas as natural and cultural resources as an inspiration for visitor enjoyment.

Natural Sounds. Visitors have the opportunity in portions of the monuments to experience natural sounds, and the experience of reverence for cultural resources and other experiential qualities of a cultural monument are sensitive to intrusions of human-caused noise. It is important to protect the natural soundscape for wildlife species as well. A natural, intact soundscape is important for animal communication, territory establishment, courtship and mating, nurturing young, and effective use of habitat. The sounds of modern society are generally confined to the developed areas in the monuments. Guiding principles and strategies will include protecting the monuments' natural sounds as a contribution to visitor enjoyment and protecting natural sounds for the benefit of wildlife.

Fire Management. Prescribed and wildland fire will be used as a tool to meet resource management objectives. The following strategies will ensure that wildland fire will be used effectively to protect resources:

- Develop and maintain a current fire management plan for the monuments.
- Cooperate with adjacent communities, groups, state and federal agencies, and tribes to manage fire in the monuments and the region.
- Use fire as appropriate to maintain and restore native plant species and control nonnative plant species.

Geologic Features. Montezuma Castle and Tuzigoot national monuments contain unique landforms. The National Park Service will implement the following policies and strategies to ensure that the geologic features are not substantially degraded and the scenic views remain unimpaired:

- Inventory, map, and monitor geologic features to assess their condition.
- Allow natural geologic processes to proceed unimpeded. Intervention in natural geologic processes will be permitted only when directed by Congress, when necessary in emergencies that threaten human life and property, or when there is no other way to protect cultural resources or critical monument facilities.
- Develop interpretive and educational programs to educate visitors and the public about geology.
- Actively seek to understand and preserve soil resources and prevent to the extent possible its removal or contamination.
- Monitor high-impact visitor use areas and take actions to reduce impacts on geologic resources.

Paleontological Resources. Montezuma Castle and Tuzigoot national monuments contain paleontological resources. The following strategies will be implemented to better understand and protect these resources:

- Expand inventorying and monitoring to ensure that these nonrenewable resources are not lost.
- Manage and study paleontological resources in their geologic context, which provides information about the ancient environment.
- Partner with federal, state, and local agencies and with academic institutions to conduct paleontological research.
- Manage fossils collected in accordance with the monuments' collection management plan.

Threatened or Endangered Species. The Endangered Species Act mandates that agencies, including the National Park Service, promote the conservation of all fed-

erally listed threatened or endangered species and their critical habitats within the monuments' boundaries. Several special-status species, including those that are listed at the federal or state levels, are known to exist in and around the monuments and to use habitats in the monuments. The following actions will be taken to protect special-status species:

- Continue to work with the United States (U.S.) Fish and Wildlife Service (USFWS) and Arizona Game and Fish to ensure that the National Park Service's actions help special status species to recover. If any state- or federally listed or proposed threatened or endangered species are found in areas that would be affected by construction, visitor use, or restoration activities proposed under any of the alternatives in this plan, the National Park Service will consult with the above agencies and will then try to avoid or mitigate any potential adverse impacts.
- Cooperate with the above agencies to inventory, monitor, protect, and perpetuate the natural distribution and abundance of all special-status species and their essential habitats in Montezuma Castle and Tuzigoot national monuments. These species and their habitats will be specifically considered in ongoing planning and management activities.

Vegetation. Whenever possible, natural processes will be relied on to maintain native plants and plant communities. Communities will include the diverse species, genetic variability, plant associations, and successional stages representing an ecologically functioning system. The following actions will be taken to manage the monuments' vegetation:

- Inventory plant communities to determine the species present and monitor communities to identify changes in their condition. Continue to inventory rare plants.

- Continue efforts to control invasive plants in the monuments. Continue to work with other federal, state, and local agencies and with private landowners to prevent the spread of invasive plant species across monument boundaries.
- Restore extirpated native species where suitable habitat exists and restoration is compatible with social, political, and ecological conditions.

Wildlife and Fish. The following policies and strategies will ensure that native wildlife and fishes are protected:

- Determine the condition of native wildlife and fish through baseline inventories and use long-term monitoring to identify and evaluate changes.
- Perpetuate the native animal life as part of the natural ecosystem. Emphasize minimizing human impacts on native animals and minimizing human influence on naturally occurring fluctuations of animal populations. Rely on ecological processes to control populations of native species to the greatest extent practical.
- Ensure the preservation of populations and habitats of migratory species, such as birds, that use the monuments. Cooperate with others to enhance the preservation of the populations and habitats of migratory species outside the monuments.
- Develop educational programs to inform visitors and the general public about wildlife issues and concerns.
- Manage populations of invasive animal species whenever such species threaten monument resources or public health and when control is prudent and feasible.
- Restore extirpated native species where suitable habitat exists and restoration is compatible with social, political, and ecological conditions.

Ecosystem Management. To achieve desired future conditions for monument resources, a regional perspective must be considered, and it must be recognized that actions taken on lands outside the monuments directly and indirectly affect the monuments. Many of the threats to monument resources, such as invasive species and water pollution, come from outside the boundaries. Therefore, an ecosystem approach is required to understand and manage the monuments' natural resources, and must be based on an understanding of the health and condition of the ecosystem.

Cooperation, coordination, and partnerships with agencies and neighbors are crucial to meet or maintain the desired future conditions for the monuments. This approach to ecosystem management may involve many parties and could include cooperative arrangements with federal and state agencies, tribes, or private landowners to address trans-boundary issues.

The following strategies will allow the National Park Service to lead in resource stewardship and the conservation of ecosystem values within and outside the monuments. They also will allow the National Park Service to maintain good relations with owners of adjacent property, surrounding communities, and private and public groups that affect and are affected by the monuments. The strategies involve active involvement of monument staff members to resolve external issues and ensure that the monuments' values are not compromised:

- Continue to seek agreements with the U.S. Forest Service (USFS), Arizona State Parks, Arizona Game and Fish, Native American tribes, and other owners of adjacent property to protect and enhance the ecosystem.
- Work cooperatively to manage nonnative species in the region.
- Continue to partner with the research community to further the knowledge

of ecosystem processes that affect the monuments.

- Continue to work with partners to protect species of concern and reintroduce extirpated native species when practical.

External Influences - Private and Public Partners, Owners of Adjacent Land, and Government Agencies

The National Park Service recognizes that Montezuma Castle and Tuzigoot national monuments are part of a greater area and that actions in the monuments affect the social, political, ecological, and historical condition of the surrounding environment and society. The management of the monuments influences local economies through tourism expenditures and the goods and services the National Park Service purchases to support operations. To ensure that the National Park Service continues to have good relations with area landowners and communities, and to ensure that the monuments are managed actively to resolve external issues and concerns, the following strategies will be implemented:

- Continue to establish partnerships with public and private organizations to achieve the purposes and missions of the monuments. Seek partnerships for resource protection, research, education, visitor enjoyment, visitor access, and management.
- Foster a spirit of cooperation with neighbors and encourage compatible uses of adjacent lands by keeping landowners, land managers, tribes, local governments, and the public informed about monument management activities. Consult periodically with landowners and communities that affect or potentially are affected by the monuments' visitors and management actions.
- Work closely with local, state, and federal agencies and tribal governments. In particular, to meet mutual

management needs, maintain a close working relationship with the federally recognized tribes, U.S. Forest Service, U.S. Fish and Wildlife Service, Arizona State Parks, Arizona Game and Fish, and owners of adjacent private land.

Ensure Sustainability by Employing User (Carrying) Capacity

General management plans must identify and implement commitments for user capacities for all areas of the monument. The National Park Service defines user capacity as the type and level of visitor use that can be accommodated while sustaining the quality of a monument's resources and visitor opportunities consistent with the purposes of the monument. It is not necessarily a set of numbers or limits, but rather a process involving monitoring, evaluation, actions (managing visitor use), and adjustments to ensure monument values are protected.

The premise behind this process is that with any use of public lands comes some level of impact that must be accepted. Therefore, the National Park Service has the responsibility to decide what level of impact is acceptable and what actions are needed to keep impacts within acceptable limits. Instead of solely tracking and controlling user numbers, the monument staff manages the levels, types, behaviors, and patterns of visitor use and other public uses as needed to manage the condition of the resources and quality of the visitor experience. Monitoring user capacity helps test the effectiveness of management actions and provides a basis for informed adaptive management of public use.

The described desired conditions related to resource protection, visitor experiences, and general levels of development form the foundation for user capacity decisions. Specific indicators and standards will be monitored to confirm that the desired conditions are achieved or maintained. Actions that could be implemented if the standards are exceeded are included

in either the general management plan or subsequent action plans. An indicator is used to track desired conditions to determine whether they are being met. A standard is basically the minimum acceptable desired condition.

User capacity decision-making, which continues indefinitely, involves monitoring the indicators, determining whether standards are met, and taking management actions to minimize impacts when needed. At Montezuma Castle and Tuzigoot national monuments, managers initially will monitor facility-wide use levels and patterns. At the Castle, where crowded conditions that could affect sustainability occasionally occur, managers will apply more specific monitoring and focused management to achieve desired conditions. Adjustments in the type of monitoring at specific sites and throughout the monuments will be made as needed. Additional information on ensuring sustainability is provided in the “User Capacity” section in chapter 2.

Provide Orientation, Interpretation, and Education

A variety of methods are used to orient visitors at Montezuma Castle and Tuzigoot national monuments, provide information about the monuments, and interpret the monuments’ resources. The National Park Service will continue to pursue strategies to ensure that information is available so that visitors can plan a rewarding visit to the monuments. Increasing outreach and educational programs will help connect diverse audiences to the monuments’ resources, build a local and national constituency, and gain public support for protecting the monuments’ resources. Continuing to provide interpretation opportunities will build emotional, intellectual, and recreational ties with the monuments and their cultural and natural heritage.

The strategies for managing orientation, interpretation, and education will be as follows:

- Continue to emphasize providing effective information, orientation, and interpretive services. Use appropriate techniques and technologies to increase the visibility of the National Park Service and its programs and to make people aware of issues facing Montezuma Castle and Tuzigoot national monuments.
- Ensure that interpretive and education programs include key resource issues, management priorities, public safety, and demonstrate standards for interpretive competencies identified and outlined by the NPS Interpretive Development Program.
- Enhance cooperative efforts and partnerships with local communities, public and private agencies, organizations, stakeholders, and land managers in the region so that visitors can better learn about the abundance, variety, and availability of the region’s cultural, recreational, and interpretive opportunities. This will orient visitors about what to do and which attractions to see.
- Provide visitors with the tools and information they need for self-management and how to enjoy the monuments in a safe, low-impact manner.
- Strengthen partnerships with state parks, national parks, educational institutions, and other organizations to enrich interpretive and educational opportunities regionally and nationally.
- Ensure accessibility of opportunities for visitors to form their own intellectual and emotional connections to resource meaning for as many audiences as practical and possible by providing a variety of both personal and non-personal interpretive services.

IMPLEMENTING THE APPROVED PLAN

Implementation of the approved plan will depend on future funding. The approval of this general management plan does not indicate that the funding needed to implement all of its provisions will be immediately available. Full implementation of the approved plan could be many years in the future.

Other factors will also affect the implementation of the approved plan. Once the

general management plan has been approved, feasibility studies and more detailed planning and appropriate environmental documentation may be required before proposed actions can be carried out. These more detailed plans would tier off this plan; describing specific actions that managers intend to take to achieve desired conditions and long-term goals. Some of these implementation plans are prepared for the monuments in response to NPS policies.

RELATIONSHIP TO OTHER PLANNING EFFORTS

Possible interactions between the alternatives and county, state, tribal, or federal land use plans and policies must be considered.

Montezuma Castle and Tuzigoot national monuments are in Yavapai County, Arizona. Properties surrounding the monuments include federal lands managed by the U.S. Forest Service, lands administered by Arizona State Parks, and private lands.

PLANS OF FEDERAL AGENCIES

U.S. Forest Service Plans

Near the monuments are the Coconino and Prescott National Forests, both of which have forest plans. The Prescott National Forest Plan was released in November 1986 and the Coconino National Forest Plan is currently being updated, and the National Park Service is a partner in the process. These plans provide long-term management direction for the forests' resource conditions, recreation opportunities, and levels of development and services.

Both forest plans include opportunities for hiking, backpacking, horseback riding, bicycling, camping, picnicking, boating, and fishing that may be appreciated by all visitors to the region. In addition, the Coconino National Forest has trail opportunities that connect with the boundary of Tuzigoot National Monument; this general management plan explores trail linkages. The conservation of these forest lands protects the scenic viewsheds around the monuments.

Park Museum Collection Storage Plan

This collection storage plan presents a comprehensive, cost-effective, and long-term solution to the current and future challenges that the National Park Service faces with regard to museum management, maximizing protection of the col-

lections with minimal cost, and recognizing and responding to park access issues. The first goal of the plan is to achieve sustainable and maintainable preservation of the collections (NPS 2007).

STATE OF ARIZONA PLANS

The expansion of recreational facilities and visitor opportunities at Dead Horse Ranch State Park may affect Tuzigoot National Monument because of its nearby location and the potential to draw more visitors to the monument.

PLANS BY OTHERS

Verde River Greenway Management Plan

The Verde River Greenway, along a segment of the nearly 180-mile-long Verde River, crosses into Tuzigoot's legislated boundary. The Greenway encompasses nearly 480 acres and is 6 miles long (Arizona State Parks, 2004). The *Verde River Greenway Management Plan* (Arizona State Parks, 1992) calls for Tuzigoot National Monument to be integrated into the Verde River Greenway through use of specialized signs and the expansion of interpretation via an interpretive corridor that would link sites, such as Tavasci Marsh and Tuzigoot National Monument.

Discussions between the National Park Service and the Verde River Greenway coordinator have been initiated and formal integration into the Greenway is expected in 2008. The *Verde River Greenway Management Plan* also suggests new trail opportunities that would connect the sites. In chapter 3 of this general management plan, the "Visitor Use and Experience" section provides more information on the *Verde River Greenway Management Plan*.

Sinaguan Circle Tour

The Sinaguan Circle Tour was conceived by a Coconino National Forest archeologist, and is supported by the Sedona Verde Valley Tourism Council. The tour would involve a partnership among the National Park Service, U.S. Forest Service, Arizona State Parks, Arizona Conservancy, and local organizations. The potential tour route would enhance opportunities for visitors to understand the regional cultural context of Montezuma Castle and Tuzigoot national monuments. The route would include the monuments, and would provide opportunities for visitors to experience and learn more about the area's pre-historic and historic cultures. The circle tour has the potential to increase visitation to the monuments.

Freeport McMoRan Copper and Gold, Inc. Mine Tailings Project

This project provided restoration and revegetation for the mine tailings owned by Freeport McMoRan Copper and Gold, Inc. (formerly Phelps Dodge Corporation) that are within the legislated boundary of Tuzigoot National Monument. The restoration and revegetation plan resulted in a more natural view and vegetation community adjacent to the monument.

Yavapai-Apache Nation Native American Visitor Center

This proposed center would enhance education in the region and perhaps add to the potential list of cultural sites that would draw visitors to the region. The project could involve an exchange of lands

between the U.S. Forest Service and the Yavapai-Apache along Interstate 17.

Montezuma Castle Highway Regional Multi-Use Trail

This project has potential to increase the number of visitors to the area. Increased tourism could affect resources such as wildlife or threatened and endangered species that cross management boundaries.

Soda Springs Ranch Development

Owners of this nearby historic ranch have repaired ranch structures for private use and are attempting to trade acreage to the U.S. Forest Service or Arizona Game and Fish Department.

Expansion of the Yavapai-Apache Casino Resort

This proposal, near the intersection of Interstate Highway 17 and the Montezuma Castle National Monument entrance road, could increase visitation to the region.

Verde Valley Regional Land Use Plan

The plan covers 714 square miles and focuses on transportation, land use, open space, housing, and land management. It also identifies water issues and economics as key long-term solutions. The plan involves collaboration among the cities and towns, Yavapai Apache Nation, federal, state, county, and local governments, and individuals.

PLANNING ISSUES AND OPPORTUNITIES

The general public, NPS staff, and other agencies and organizations identified issues and concerns during scoping (early information gathering) for this general management plan. Consultation and correspondence relating to scoping and other elements of environmental assessment preparation are provided in appendix B.

An issue is an opportunity, conflict, or problem regarding the use or management of public lands. Comments were solicited at public workshops, in meetings with agencies and tribes, through planning newsletters, and on the monuments' Internet sites.

The National Park Service contracted with Arizona State University to conduct a social science research project to gather information about visitors to the monuments. The project involved surveying adult visitors to gather data on visitation patterns, length of stay, activity participation, demographics, and perceptions of visitor experiences. The information from the study was used in the development of the plan alternatives.

Comments received during scoping demonstrated that there is much that the public likes about the national monuments with regard to their management, use, and facilities. The issues and concerns generally involve determining appropriate visitor uses and identifying the types and levels of facilities, services, and activities while remaining compatible with desired resource conditions. The general management plan alternatives provide strategies for addressing the issues within the context of the monuments' purpose and significance.

ISSUES AND OPPORTUNITIES

This general management plan will help the monuments determine the best mix of resource protection and visitor use beyond what is prescribed by law and policy to preserve the monuments' cultural

and natural resources while encouraging visitors and employees to understand and appreciate their value. The following issues and opportunities were identified for Montezuma Castle and Tuzigoot national monuments:

- The plan needs to evaluate whether additional opportunities exist to expand the stories being told at the monuments to link the prehistoric cultures with contemporary people and whether to expand the areas available within the monuments for visitors to explore.
- The plan needs to evaluate how the visitors should interact with the resources of the monuments, including the variety and locations of monument resources that are accessible to visitors and the means of accessing resources.
- The plan needs to evaluate the character and level of development within the monuments and whether to expand existing facilities or construct additional facilities at the monuments to accommodate visitors and monument operations.
- The monuments' existing headquarters and maintenance facilities are outside the monument boundaries. There are two distinct General Services Administration leases on the headquarters and maintenance facilities. The plan should examine how best to accommodate these monument management functions.
- The monuments are a small portion of the Verde Valley. The National Park Service needs to work in partnerships with the other land management entities, local communities, tribes, and organizations within the Verde Valley on resource management and visitor use issues and opportunities.

- There are lands within the existing legislated boundaries that have not been acquired. Some of these contain significant resources that, if acquired, would protect additional resources associated with the monuments' purpose. This plan will provide guidance for managing these lands if they are acquired. A boundary adjustment study is under consideration but is beyond the scope of this general management plan.
- The boundary of Tuzigoot National Monument contains approximately 300 acres of mine tailings and other land disturbed by mining activities. The mine tailings do not contain resources related to the purpose and significance of the monument, are re-contoured and revegetated but highly disturbed by mining activity, and are contaminated by hazardous substances. The plan will evaluate whether the monument boundary should be adjusted to eliminate these tailings areas, while retaining remaining suitable lands.
- Tavaschi Marsh, acquired in 2006, is in a degraded condition and actions to restore the marsh are underway. The long-term objectives for restoration need to be supported within the management framework of the plan.
- Visitation at the monuments has generally increased since the 1940s, peaking at 1.2 million visitors in the mid 1990s. Although visitation has declined since the early 1990s, leveling off at about 605,000 visitors annually during the past three years, the population of the surrounding region is growing rapidly, and development of tourism in the area is expected to continue. Already, for its size, Montezuma Castle is among the most heavily visited areas in the southwest. Of the 360 visited NPS units, Montezuma Castle ranked 100th for visitation in 2007 and Tuzigoot ranked 218; these rankings have remained relatively stable in recent years. Annual visits to Montezuma Well have averaged approximately 190,000 over the past decade. The present visitor contact station is small, outdated, and limited in its ability to serve visitors. Expanded visitor contact could improve Montezuma Well's ability to interpret early regional land use. Each unit is readily accessible from Camp Verde, and travel time is approximately 10 minutes to Montezuma Castle (5 miles), 20 minutes to Montezuma Well (13.1 miles), and 40 minutes to Tuzigoot (19.6 miles). Montezuma Castle is in less than five minutes or approximately one mile from Exit 289 on Interstate Highway 17.
- Currently, there is limited general orientation to all three sites, resulting in a lack of connectedness of the sites and their stories. If visitor interaction with monument resources increases, cultural and natural resources could experience additional effects.
- This plan analyzes developing new onsite administrative and storage space because the current General Services Administration lease with the Yavapai Apache reservation for maintenance space is expiring. Construction of workspace and storage at the three sites would improve monument operations because it is more efficient to provide workspace and store equipment within the units that use them most frequently rather than in one central area.
- The National Park Service is considering whether to acquire private land holdings within the monument boundaries, including land owned by Freeport McMoRan Copper and Gold, Inc. (except for the mine tailings at Tuzigoot, which the monument does not wish to acquire), or working with Freeport McMoRan and other entities

to protect the land for public use rather than development.

- The population of and land uses within the Verde Valley are changing. During the life of the general management plan, these changes could have an effect on visitation and resource conditions of the monuments.

ISSUES NOT ADDRESSED IN THE GENERAL MANAGEMENT PLAN

Not all of the issues raised by the public are included in this general management plan. Some of the issues raised by the public were not considered because they:

- Were not feasible;
- Are already prescribed by law, regulation, or policy (see the “Servicewide Mandates and Policies” section);
- Would be in violation of laws, regulations, or policies; or
- Were at a level that was too detailed for a general management plan and are more appropriately addressed in subsequent planning documents.

General comments that were received from the public that fell under one or more of the categories included:

- Managing use of lands or resources outside of the monument boundaries;
- Managing the restoration of the Freeport McMoRan Copper and Gold, Inc. mine tailings; and

- Administration of the monuments by entities other than the National Park Service.

Following are two additional issues and the reasons for excluding them from this general management plan.

Vanishing Treasures

Under the guidance of Sec. 106 and 110 of the National historic Preservation Act of 1966, the Vanishing Treasures Initiative will continue under any of the alternatives being considered. The initiative seeks to eliminate cultural resource loss by addressing emergency project needs. It focuses on replacement of an aging workforce that often has unique craft skills, and seeks to move, over the long-term, from a posture of dealing with emergency projects and urgent personnel loss to become a proactive program. NPS staff members will continue to stabilize structures in the monuments in accordance with established priorities. Additional guidance from the general management plan is not needed to implement this program.

Fire Management

The management of fire within the monuments will continue to follow the existing fire management plan. The National Park Service will continue to work with other federal and state agencies to manage fire.

IMPACT TOPICS: RESOURCES AND VALUES AT STAKE IN THE PLANNING PROCESS

Impact topics allow comparison of the environmental consequences of implementing each alternative. Impact topics were identified based on federal laws and other legal requirements, NPS subject-matter expertise and knowledge of limited or easily impacted resources, NPS policies, and issues or concerns expressed by other agencies or members of the public during scoping. A brief rationale for the selection of each impact topic is given below, and justifications are provided for dismissing other impact topics from further consideration.

IMPACT TOPICS TO BE CONSIDERED

Cultural Resources

Cultural resource subtopics include archaeological resources, prehistoric and historic structures and buildings, cultural landscapes, and ethnographic resources, sacred sites, and traditional cultural properties. Each of these topics has the potential to be affected by components of the no-action and action alternatives.

Archeological Resources. Potential new facilities and current and increased visitor use have the possibility to affect archeological resources.

Prehistoric and Historic Structures and Building. Public accessibility provided for and managed by the alternatives could affect prehistoric and historic structures and buildings.

Cultural Landscapes. Although no formal cultural landscape inventory work has been conducted at the monuments, some known and potential cultural landscape resources have been identified and the alternatives could affect these resources.

Ethnographic Resources and Traditional Cultural Properties. Although there are no identified ethnographic resources or traditional cultural properties in the monuments, the alternatives would be expected to have beneficial impacts on resources if any were identified and documented pursuant to ongoing consultation and research.

Natural Resources

Floodplains. The proposed actions have the potential to affect floodplains along Wet Beaver Creek, Beaver Creek, and the Verde River.

Soils. The action alternatives would include both short- and long-term disturbance of soil in the monuments. The disturbance would be associated with trail construction and improvements or proposed development.

Vegetation. As described for soils, the development of trails and other actions associated with the alternatives have the potential to affect vegetation at the monuments.

Wetlands. Tavaschi Marsh contains important wetland habitats and contributes to water quality, flood control, and wildlife support functions. Elements of the alternatives have the potential to affect the marsh.

Wildlife. The potential increase in visitation and the interactive nature of some elements of the alternatives has the potential to affect wildlife and their habitat at the monuments.

Threatened or Endangered Species. There are listed species that rely on the habitats at the monuments that could be affected by proposed management ac-

tions. Additionally, the proposed actions have the potential to affect designated critical habitat.

Visitor Use and Experience

A major component of each of the action alternatives is an increase in the interaction between visitors and the resources at the monuments. These actions have the potential to increase the number and the activities of monument visitors and to change their effects on resources at the sites.

Socioeconomics

The alternatives have the potential to change the number of and activities of monument visitors, which could affect socioeconomics at the monuments and in the surrounding area.

Monument Operations

Monument operations would be affected by the actions proposed under the action alternatives.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

The following impact topics that commonly are considered during the planning process were not relevant to the development of this general management plan for Montezuma Castle and Tuzigoot national monuments. They were dismissed either because implementing the alternatives would have negligible effects on the impact topic or resource, or because the resource does not occur in the monuments.

Cultural Resources

Museum Collections. Museum collections were dismissed because none of the alternatives considered in this plan affect the monuments' collections.

The Montezuma Castle National Monument museum collections primarily include archeological artifacts, objects, and

materials recovered from excavating the monument's ruins. The collections also contain thousands of documents of archival materials. In addition, there are a small number of other types of objects, including ethnographic, historic, biologic, paleontologic, and geologic specimens.

The collections are either retained on site (an estimated 60% of the cataloged collections, primarily archives but also archeology and ethnology) or stored and curated at the Museum Collections Repository, Western Archeological and Conservation Center in Tucson, as designated by the *Park Museum Collection Storage Plan* prepared by the NPS Museum Management Program.

Montezuma Castle has not conducted an archival survey to determine the extent of the museum archives (NPS 2008a). Items from the monument's natural history collection may be transferred from the Western Archeological and Conservation Center to the Northern Arizona Facility following its construction (NPS 2007).

Dedicated curatorial work and research spaces for the acquisition, accession, preparation, and study of museum collections are needed (NPS 2008a). An ethnographic report (as discussed in the ethnographic resources section of chapter 3) prepared in 1994 focused on the national monument's cultural affiliations and the items and collections that are related to the Native American Graves Protection and Repatriation Act (NAGPRA).

The Tuzigoot National Monument museum collections include archeological materials that were recovered from the excavation of the Tuzigoot Pueblo ruins. The Tuzigoot collections constitute the largest artifact assemblage for the Tuzigoot Phase. Most items were excavated during the 1930s as part of a variety of federally funded projects. About 7% of the collection, including pottery, basketry, and jewelry, are on exhibit in the monument museum. The remaining 93% are

stored and curated at the Museum Collections Repository, Western Archeological and Conservation Center, as designated by the *Park Museum Collection Storage Plan*. In addition to archeological objects, the collections include a small number of other types of objects, including ethnographic, historic, geologic, and biological specimens, plus thousands of documents of archival materials.

Tuzigoot has not conducted an archival survey to determine the extent of the museum archives (NPS 2008b). Items from the monument's natural history collection may be transferred from the Western Archeological and Conservation Center to the Northern Arizona Facility following its construction (NPS 2007).

Dedicated curatorial work and research spaces for the acquisition, accession, preparation, and study of museum collections are needed (NPS 2008b). An ethnographic report (as discussed in the ethnographic resources section of chapter 3) was prepared in 1994 that focused on the national monument's cultural affiliations and the items and collections that are related to the Native American Graves Protection and Repatriation Act.

Natural Resources

Air Quality. Air quality in the monuments meets national ambient air quality standards for specified pollutants. Although actions proposed in this plan could result in short-term, negligible effects related to dust and emissions associated with construction and road improvements, no long-term change in air quality associated with these actions would be expected.

Geologic Hazards. There are no specific geologic hazards, such as earthquakes, volcanoes, or landslides, at the monuments. Although there is a potential for cliffs and other areas to collapse as part of the natural erosion process, none of the actions analyzed in this plan would affect these natural processes.

Prime and/or Unique Farmland. The Farmland Protection Policy Act (PL 97-98) (1981) was passed to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to ensure that federal programs are administered in a manner that, to the extent practicable, is compatible with state, unit of local government, and private programs and policies to protect farmland. Farmland includes prime or unique land, or land of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the state or local government.

The National Park Service consulted with the Department of Agriculture's Natural Resources Conservation Service, the agency responsible for implementation of the policy. The Natural Resource Conservation Service advised that there are no prime farmlands within the monuments.

Water Resources. Water resources at Montezuma Castle and Tuzigoot national monuments include Wet Beaver Creek, Beaver Creek, the Verde River, Montezuma Well, the outflow ditch from Montezuma Well, and Shea Spring (flows into Tavasci Marsh). Groundwater is vital to the wetland systems, springs, surface fluvial systems, and monument operational needs (potable water supply). The regional aquifer that support these cultural features and natural systems includes the alluvium of the Verde River, Verde Formation, Coconino Sandstone, Supai Formation, Naco Formation, Redwall Limestone, Martin Formation, and Tapeats Sandstone. These geologic units are hydrologically connected, so regional external influences could impact monument groundwater resources and systems dependent on those groundwater resources.

Although actions associated with the alternatives and other plans and projects (for example, trail and boardwalk construction, invasive vegetation control, habitat restoration) have some potential to

affect water resources, the adverse impacts would be short-term and negligible at most. Sedimentation and increased turbidity would be the primary concerns and these potential effects would be offset with implementation of best management practices and mitigation measures to protect water quality. As a result, water resources were not retained for full evaluation in the environmental assessment.

The effects of regional external influences on groundwater resources are evaluated in the cumulative impacts analysis.

Paleontological Resources. Although there are paleontological resources at the monuments, none of the alternatives would have any adverse effects on these resources. Public access to paleontological resources, currently restricted, would not change. As a result, paleontological resources were not retained for full evaluation in the environmental assessment.

Transportation

The transportation infrastructure would not change appreciably within the monuments with implementation of any of the alternatives in this document. There are no proposals for primary or secondary road construction in this plan that would increase the extent of the transportation system in the vicinity of the national monuments.

Conflicts with Land Use Plans, Policies, or Concerns

Plans and policies associated with lands adjacent to the monuments were reviewed. It was determined that alternatives for management of the monuments would not affect these lands, or the policies and plans of other jurisdictions. Improvement of connections to Verde River Greenway, Dead Horse Ranch State Park, and Coconino National Forest are consistent with current plans and management directions, and the effects of the alterna-

tives are considered under visitor use and experience. Changes in Verde Valley population and land use are considered in the Verde Valley Regional Land Use Plan. The alternatives do not conflict with this plan, and the effects of socioeconomic changes in the valley are considered in the Socioeconomics section.

Energy Requirements and Conservation Potential

The alternative presented in this plan would result in negligible changes in energy consumption compared to current conditions. The National Park Service would continue to pursue sustainable practices whenever possible in all decisions regarding national monument operations, facilities management, and development. Whenever possible, the National Park Service would use energy conservation technologies and renewable energy sources.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the 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.

There are no Indian trust resources at Montezuma Castle and Tuzigoot national monuments. The lands within the monuments are not held in trust by the Secretary of the Interior for the benefit of Indians based on their status as Indians. Therefore, the project would have negligible effects on Indian trust resources. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with sec-

tion 1.4.7.1 of *Management Policies 2006*. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic has been dismissed from further analysis in this document.

Natural Sounds

In accordance with *Management Policies 2006* (NPS 2006), an important part of the NPS mission is the preservation of natural soundscapes associated within national park system units. Natural soundscapes exist in the absence of human-caused sound.

No monument-specific sound measurements were made to determine natural ambient sound levels in the monuments for this plan. The natural soundscape includes sounds produced by such sources as wind, thunder, insects, bird and animal calls, falling rocks, and creeks. Noise levels vary between day and night in the monuments. Because human activity mostly occurs during the day, noise levels in the monuments are higher than at night. Night provides greater opportunity to experience the natural sounds with less human influence.

The primary human-made sounds present in the monuments are noises associated with vehicles and monument operations. Engines are a major source of human-caused sound in the monuments. These include automobiles, motorcycles, trucks, aircraft, and generators. Other common sources of human-caused sound include electronic devices such as radios, human vocalizations, and vehicle tires on roads. Human-caused sound is typically highest in the spring and fall, corresponding with highest monument visitation during these periods.

Hauling material, operating equipment, and conducting other construction activities associated with the alternatives would result in human-caused sounds. However, all construction activity would occur in the developed area of the monuments,

where the natural ambient soundscape is affected by other noise and where opportunities for visitors to experience natural sound environments already are limited. Sounds associated with construction would be temporary, occurring only during the construction activity, and would negligibly impact visitor enjoyment of the monuments.

Although new facilities and increased access would occur in already developed zones, they would potentially alter the sound footprint and have the potential to create longer lasting effects. For example, a new visitor center would result in increased vehicle noise, visitor noise, and buildings operations noise. While these noise sources may occur in more developed areas, they would also have the potential to impact nearby “Interaction and Discovery” and “Resources and Research” zones as a result of increased visitation in these areas.

Within the alternatives considered in this document, proposed new facilities would be in areas where roads, highways, or other monument infrastructure currently exists. Changes in visitor numbers would be associated largely with trends in regional population and tourism. Adverse impacts on natural sounds resulting from proposed new infrastructure would be expected to be audible only up to short distances from the noise source, at low levels, and therefore no more than negligible to minor. New trails outside of the existing developed areas would be upgraded surfaces on existing road traces and additional human-caused noise associated with foot-travel would be audible only in local areas, at low levels, and therefore not result in greater than negligible adverse impacts to natural sounds.

Lightscape Management

In accordance with *Management Policies 2006* (NPS 2006), the National Park Service strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of hu-

man-caused light. The monuments strive to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements, ensure that all outdoor lighting is shielded to the maximum extent possible, and keep light on the intended subject and out of the night sky. The proposed actions would not affect the existing exterior lighting at the monuments.

Environmental Justice

Executive Order 12898 requires federal agencies to identify and address dispro-

portionately high and adverse human health or environmental effects of federal programs and policies on minority and low-income populations and ensure that these programs and policies do not discriminate against people (including populations) because of race, color, or national origin. None of the actions proposed in this general management plan would have disproportionate or adverse impacts on minorities or economically disadvantaged populations.

**CHAPTER 2:
ALTERNATIVES, INCLUDING
THE PREFERRED ALTERNATIVE**

INTRODUCTION

Many aspects of the desired condition of Montezuma Castle National Monument (the Castle Site and Well site) and Tuzigoot National Monument are defined in the establishing legislation, the national monuments' purpose and significance statements, and the servicewide mandates and policies described earlier. Within these parameters, the National Park Service solicited input from the public, NPS staff, other government agencies, tribal officials, and other organizations regarding issues and desired conditions for the national monuments. Planning team members gathered information about existing visitor use and the condition of the national monuments' facilities and resources. They considered which areas of the national monuments attract visitors, and which areas have sensitive resources. Using this information, the planning team developed four management zones and alternatives to reflect the range of ideas proposed by NPS staff and the public.

This chapter describes the management zones and the alternatives for managing the national monuments for the next 15 to 20 years. It includes tables at the end of the chapter that summarize the key differences between the alternatives and the impacts that are expected from implementing each alternative. The summary of impacts table is based on the analysis in Chapter 4: Environmental Consequences. This chapter also describes mitigation measures that would be used to lessen or avoid impacts, the future studies that would be needed, and the environmentally preferred alternative.

MANAGEMENT ZONES AND ALTERNATIVES

Management zones and alternatives are the building blocks for developing an approved plan for managing a national park system unit. All management zones and alternatives are developed within the

scope of the unit's purpose, significance, mandates, and legislation.

Management zones are descriptions of desired conditions for monument resources and visitor experiences in different areas of the monuments. The management zones identify the widest range of potential appropriate resource conditions, visitor experiences, and facilities for the monuments that fall within the scope of the monuments' purpose, significance, and special mandates. Four management zones, described in table 1, have been identified for Montezuma Castle and Tuzigoot national monuments.

Each of the alternatives has a management concept and a description of how different areas of the national monuments would be managed (management zones and related actions). The concept for each alternative is then presented by the placement of each management zone type on the map of the monument. For example, management zones for Montezuma Castle and Tuzigoot national monuments include "interpretive historic" and "resources and research." An alternative that stressed maintaining an undeveloped and natural condition would have comparatively more of the land presented as resources and research zone than an alternative that emphasized education and interpretation and that had a large area within the interpretive historic zone.

This general management plan and environmental assessment presents three alternatives, including the NPS' preferred alternative, for future management of Montezuma Castle and Tuzigoot national monuments. Alternative A, the "no-action" alternative that presents a continuation of existing management direction, is included as a baseline for comparing the consequences of implementing each "action" alternative. These action alternatives are alternative B (preferred) and alternative C. These action alternatives present

different ways to manage resources and visitor use and to improve facilities and infrastructure at the national monuments.

The two action alternatives embody the range of what the public and the National Park Service want to see accomplished with natural resource conditions, cultural resource conditions, and visitor use and experience at Montezuma Castle and Tuzigoot national monuments. The configurations for each alternative were developed by overlaying the management zones on a map of the monuments.

The National Park Service would continue to follow existing agreements and servicewide mandates, laws, and policies regardless of the alternatives considered in this plan. These mandates and policies were described in chapter 1.

FORMULATION OF THE ALTERNATIVES

The alternatives focus on *what* resource conditions, visitor uses, and experiences or opportunities should be at the national monuments rather than on details of *how* these conditions, uses, and experiences should be achieved. Thus, the alternatives do not include many details on resource or visitor use management.

More detailed plans or studies will be required before most conditions proposed in the selected alternative are achieved. The implementation of the selected alternative also will depend on future funding and environmental compliance. This plan does not guarantee that that money will be forthcoming. The plan establishes a vision of the future that will guide day-to-day and year-to-year management of the na-

tional monuments, but full implementation could take many years.

IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The development of the preferred alternative involved evaluating the alternatives with the use of an objective analysis process called “choosing by advantages.” Through this process, the planning team identified and compared the relative advantages of each alternative according to the following factors:

- Provide opportunities for quality visitor experiences;
- Protect cultural resources;
- Preserve natural resources; and
- Improve NPS operational efficiency.

This comparison helped the planning team determine the elements of the alternatives that would be most advantageous to monument resources and the public.

The costs of implementing the alternatives were also considered. For cost estimating, general assumptions were made regarding the amounts and sizes of development or restoration. These assumptions were then carried across all alternatives so that comparable costs were considered.

The relationships between the advantages and costs of each alternative were established in the choosing by advantages analysis. This information was used to evaluate the attributes of the initial alternatives and identify the preferred alternative. This alternative gives the National Park Service the greatest benefits for each factor listed above for the most reasonable cost.

MANAGEMENT ZONES

Management zones define specific resource conditions and visitor experiences to be achieved and maintained in specified areas of the national monuments under each action alternative. Each zone includes the types of activities and facilities that are appropriate in that management zone. The management zones were developed as part of this planning effort and, therefore, are not applied or mapped for the no-action alternative.

In formulating the alternatives, the management zones were placed in different

locations or configurations on a map of the monuments according to the intent (concept) of each alternative. That is, the alternatives represent different ways to apply the management zones to the national monuments.

Table 1 presents the management zones for Montezuma Castle and Tuzigoot national monuments. Resource conditions, visitor experiences, and appropriate activities and facilities are described in the table for each management zone.

TABLE 1: MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS MANAGEMENT ZONES

Feature	Park Operations	Interpretive Historic	Interaction and Discovery	Resources and Research
Zone concept	Operations are emphasized with substantial levels of resource modification and little or no visitor use.	Formal, structured education and visitor services are emphasized with high use and resources in good condition.	Self exploration and interactive education are emphasized with moderate use and resources in good condition.	Resource protection and research are emphasized with limited use and resources in improving or pristine condition.
Natural resource condition	Natural resources may be modified for NPS operational needs.	Natural resources may be manipulated in small areas to minimize impacts relating to visitor use.	Natural resources may be manipulated to include features to tell the history of the area.	Management is limited to moving toward self-sustaining communities and ecological systems of native plants and animals.
Cultural resource condition	Properties eligible for or listed in the National Register of Historic Places or that fit the Archeological Resources Preservation Act definition of archeological resources are preserved. Additions or modifications are allowed only if they do not adversely affect resource integrity.	Stabilization and intensive preservation maintenance of all resource fabric associated with the National Register-eligible or -listed properties or that fit the Archeological Resources Preservation Act definition of archeological resources is a high management priority. Some modifications to cultural resources to support visitor activities may be appropriate.	Stabilization and intensive preservation maintenance of all resource fabric associated with National Register-eligible or -listed properties or that fit the Archeological Resources Preservation Act definition of archeological resources is a high management priority.	Archeological sites and other cultural resources that are eligible for or listed in the National Register or that fit the Archeological Resources Preservation Act definition of archeological resources are managed for their protection and research.
Hydrologic processes	Natural hydrologic processes are likely to be disturbed to protect infrastructure, but mitigation is used to minimize off-site impacts.	Natural hydrologic processes and water features may be stabilized to control erosion and deposition to protect cultural sites and landscapes.	Natural hydrologic processes and water features are an important component of the historic scene and, to the extent practical, are managed to reflect period conditions.	Natural hydrologic processes are primarily undisturbed except for management needed to repair past damage or protect cultural resources.
Natural sights and sounds	Natural sights and sounds may be compromised by the presence of vehicles and high levels of human activity.	A moderate noise level often occurs, including noise from vehicles and voices. Human-related sights predominate. Natural conditions are less important to the visitor experience than in other zones.	Natural sounds and scenic quality are important to the visitor experience and or protection of wildlife. Periodic, low-intensity noise comes from vehicles and human voices. Natural sights predominate.	Natural sounds and scenic quality are important. Natural sounds and sights predominate. Intrusions are rare, of low intensity, and mainly from outside the zone (such as vehicle noise).

Table 1: Montezuma Castle and Tuzigoot National Monuments Management Zones

**TABLE 1: MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS MANAGEMENT ZONES
(CONTINUED)**

Feature	Park Operations	Interpretive Historic	Interaction and Discovery	Resources and Research
Tolerance for impacts from human use	Area has a high tolerance for resource impacts.	Area has a moderate tolerance relating to development and visitor use.	Area has a low tolerance relating to development and visitor use.	Area has a very low tolerance to development and visitor use. Resource protection takes precedence.
Visitor experience	Visitor access is restricted.	Amenities and services are available to welcome and orient visitors to the monuments and to support day-use activities. Visitors have a formal, structured, educational experience. Most time spent in this zone is on a hardened, designated route with numerous interpretive messages highlighting monument themes.	Visitors experience resources and education opportunities that represent time periods from the Sinaguan culture to the 1860s. Contact with cultural and natural resources provides opportunities for visitor learning, mostly through self-discovery and exploration. Some structured learning aids may be provided, such as trails, signs, and programs.	Access by visitors is highly regulated because of the sensitivity of resources. Guided walks may provide limited access and an in-depth learning opportunity.
Interpretation, education, and orientation	These activities do not occur in this zone.	Formal, structured opportunities are greatest in this area and could include guided programs and contact with roving interpreters. Opportunities for all ages and abilities to learn about monument resources are a high priority. All monument themes are introduced.	Opportunities primarily are self-directed with signs and brochures. Cultural demonstrations linking prehistoric to contemporary cultures could occur. To the extent permissible under section 5.3.5.2.4 of <i>Management Policies 2006</i> , recreated land use scenes, such as prehistoric or historic farming, could be provided to illustrate the historic landscape.	Primarily, these areas would be interpreted indirectly in other areas of the monuments.
Use levels, density, and encounters	Visitor use does not occur in this zone.	High levels of activity predominate with a very high probability of encounters with other visitors and NPS staff. Group activities are handled effectively.	Moderate levels of activity occur in this zone with a moderate probability of encountering other visitors and NPS staff.	Except for a limited number of guided walks, this zone has very low levels of visitor use, low visitor density, and few encounters with others.
Appropriate activities	Visitor activities do not occur in this zone.	Activities include walking, natural and cultural resource observation, guided walks, picnicking, and photography. Special events could be allowed with a permit.	Activities include resource education, interpretive walks, natural and cultural resource observation, and sightseeing.	Activities include guided, interpretive hikes; photography; resource observation, and research.
Level of challenge,	Visitor activities do not occur in this	This zone provides a low level of challenge and	This zone provides a moderate level of chal-	A moderate to high time commitment is

**TABLE 1: MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS MANAGEMENT ZONES
(CONTINUED)**

Feature	Park Operations	Interpretive Historic	Interaction and Discovery	Resources and Research
adventure, and time commitment	zone.	adventure. A short time commitment is needed to experience this zone.	allenge and adventure, and requires a moderate time commitment.	needed to access and experience this zone. Challenge and adventure are not appropriate uses.
Degree and character of development	This zone has concentrated areas of intensive development to support monument operations.	This zone has concentrated areas of intensive development. Noncontributing elements are apparent, but are carefully designed and placed to complement the character of adjacent zones.	This zone has moderate levels of development. The character is less formal than the Interpretive Historic zone.	No development for visitor use occurs in this zone.
Types of facilities	Monument administration facilities in this zone include headquarters, maintenance areas, housing, and other facilities necessary for the management of the monuments.	This zone includes visitor centers, fee stations, comfort stations, picnic areas, roads, parking lots, paved or hardened trails, benches, wayside exhibits, kiosks, and education facilities. Commercial visitor service and facilities could be based in this area. Regulatory and interpretive signs are common.	Facilities in this zone include interpretive signs and natural-surface trails that reflect historic conditions as much as possible. Other facilities, such as farm plots, represent periods of significance. Improvements that facilitate interpretation and safety are small and blend with the environment.	This zone does not have any development for visitor use.
Visitor management	Visitor activities do not occur in this zone.	Physical controls, such as fencing and barriers, and providing tools for visitor self-management, such as prohibiting climbing, restrict visitor access and accommodate high use while protect resources.	Providing tools for visitor self-management, such as prohibiting climbing, ensure resource protection while accommodating moderate use.	Regulatory controls on visitor access, such as allowing only guided trips or access for approved research, results in low use and ensures resource protection.
Thresholds for triggering visitor management actions	Visitor activities do not occur in this zone.	Thresholds are low for safety issues, moderate for resource protection, and moderate for visitor experience.	Thresholds are moderate for safety issues, low for resource protection, and low for visitor experience.	Thresholds are moderate for safety issues, low for resource protection, and high for visitor experience.

ALTERNATIVE A: NO-ACTION ALTERNATIVE

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

This alternative continues current management direction and trends at Montezuma Castle and Tuzigoot national monuments. It provides a baseline for comparison in evaluating the changes and impacts of the action alternatives. The National Park Service would continue to manage the monuments as it has in the past. The last comprehensive planning effort for the national monuments was completed in 1975. At that time, management zones such as those developed and applied to alternatives B and C in this document were not used. Management direction for resource protection and visitor use would continue to be provided, as appropriate, by the specific direction provided in the 1975 plan, and managers would continue to follow the special mandates and administrative commitments and the servicewide mandates and policies that were described in "Guidance for the Planning Effort" in chapter 1, as staffing and budget allow.

The locations of facilities are shown on three maps, titled:

- Alternative A – No Action, Montezuma Castle National Monument, Castle Site;
- Alternative A – No Action, Montezuma Castle National Monument, Well Site; and
- Alternative A – No Action, Tuzigoot National Monument.

The emphasis under this alternative would be to continue the current management of the monuments. Specifically:

- For the most part, existing operations and visitor facilities would remain as they are today.
- Most of the areas accessible to visitors would continue to have hardened fa-

cilities with physical and regulatory barriers to manage visitor use.

- There would continue to be limited opportunities for close contact between visitors and the natural and cultural resources at the sites.
- Water quantity monitoring at Montezuma Well and in Wet Beaver Creek and the Verde River would continue.
- Much of the monuments' lands would be off-limits to visitors to protect their sensitive cultural resources.

The interpretive emphasis would continue to focus on the three primary sites (Montezuma Castle, Montezuma Well, and Tuzigoot Pueblo) within the monuments. The current low level of connection between the sites in terms of interpretation and activities would continue.

Interpretation would continue to occur at the monuments' visitor centers, through roving interpreters, and with some offsite programs. There would continue to be limited opportunities for group programs and/or cultural demonstrations.

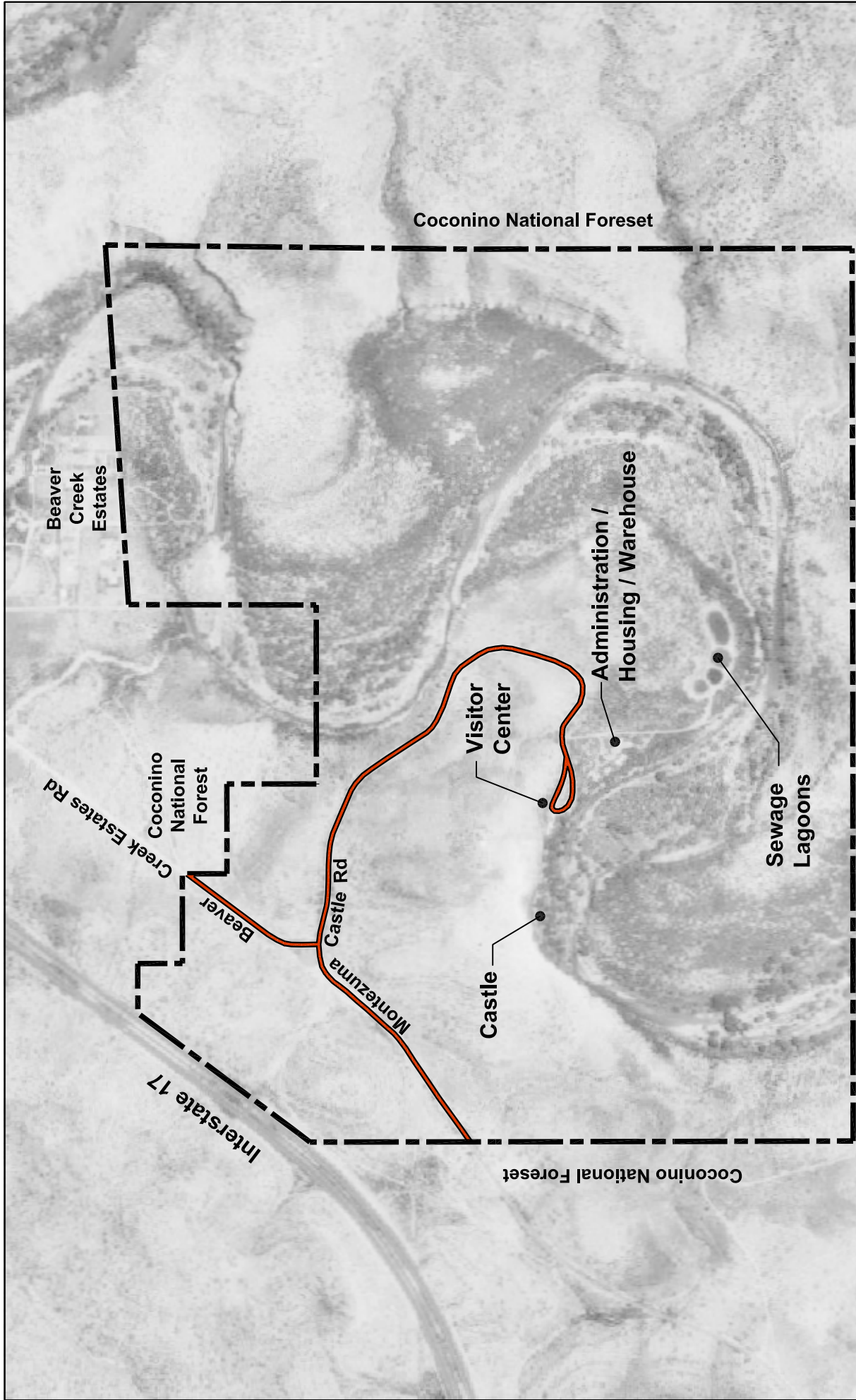
Resource activities would continue to focus on stabilizing the primary sites. The principal archeological resources, such as the Tuzigoot Pueblo and Montezuma Castle, would receive intensive preservation treatment and regular cyclic maintenance. Other archeological resources would be stabilized pursuant to consultation under section 106 of the National Historic Preservation Act. However, despite improved techniques, more highly skilled labor, and specialized training, the lack of adequate funding and personnel has barely enabled staff to keep up with necessary routine stabilization work, much less long-term, cyclic work that should be performed in a timely manner to prevent further deterioration.

Natural resources would be protected by virtue of being in the monuments. How-

ever, management of these resources would be constrained by the lack of staff and funding. Hydrologic resources, such as Beaver Creek, would continue to be managed in some areas to control erosion and deposition and to protect cultural sites and landscapes.

BOUNDARY ADJUSTMENTS, LAND PURCHASES, AND EASEMENTS

The no-action alternative would not include any boundary adjustments, land purchases or easements.

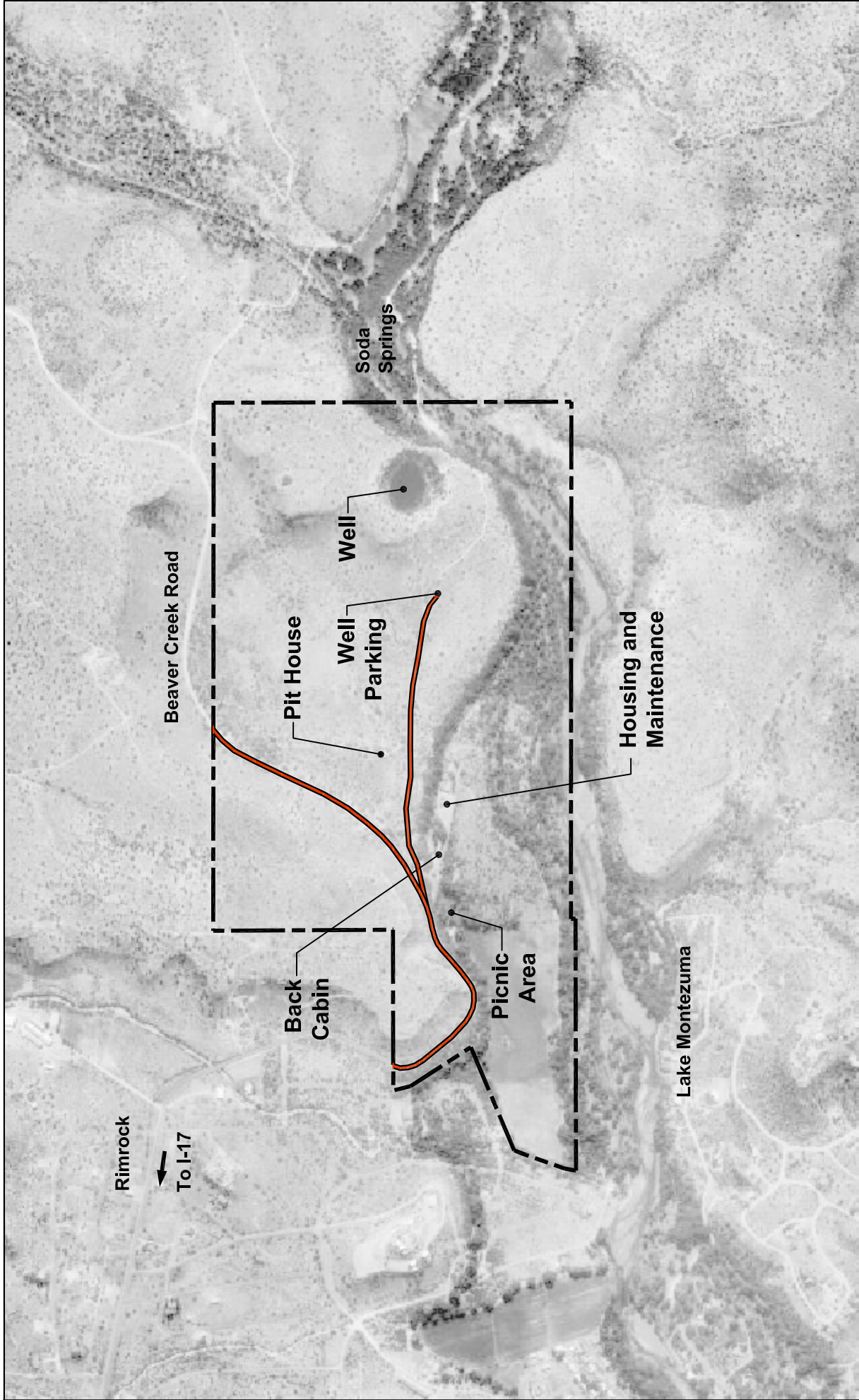


Alternative A - No Action

Montezuma Castle National Monument - Castle Site

United States Department of the Interior / National Park Service

DSC • 309 • 20025 • August 2008



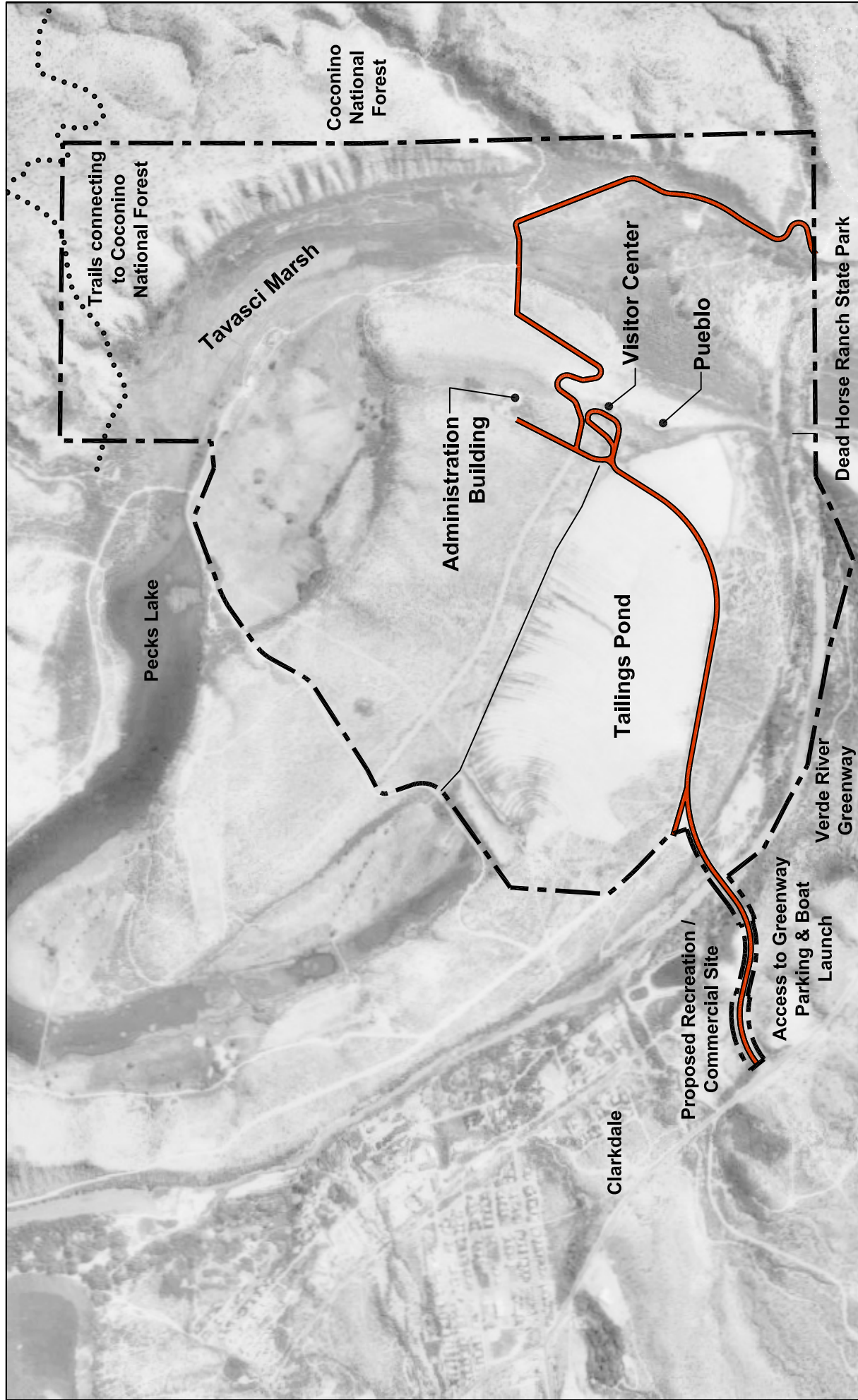
LEGEND
--- Monument Boundary
— Road

Alternative A - No Action

Montezuma Castle National Monument - Well Site

United States Department of the Interior / National Park Service

DSC • 309 • 20026 • August 2008



LEGEND

- Monument Boundary
- Road
- Existing Trail

Alternative A - No Action

Tuzigoot National Monument

United States Department of the Interior / National Park Service

DSC • 309 • 20027 • July 2008

ALTERNATIVE B (PREFERRED)

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

The main emphasis of this alternative is to connect the three sites with improved regional orientation to the Verde Valley. Visitors would be introduced to all three sites and their related interpretive themes through coordinated messaging among the three sites. Visitors would travel to the sites to learn about the prehistoric and historic stories associated with human settlement of the Verde Valley.

- The Castle would highlight the architecture of the structure and offer the perspective of life in a cliff dwelling. This alternative would provide spectacular views from below the Castle along Beaver Creek.
- Montezuma Well would highlight the prehistoric and historic farming activities that were possible in the area because of the presence of water.
- Tuzigoot Pueblo would highlight the perspective of daily life in a hilltop pueblo, providing demonstrations and programs associated with the socioeconomic activities of the area.
- Partnerships would be developed and enhanced with Verde Valley organizations, land owners, and government agencies to ensure awareness of the significance of the monuments and the important role that regional activities and land uses can play in the protection of monument resources.

Managers would continue to follow the special mandates and administrative commitments and the servicewide mandates and policies that were described in "Guidance for the Planning Effort" in chapter 1.

CONDITIONS AND ACTIONS COMMON TO ALL THREE SITES

Features of alternative B that would apply at Montezuma Castle, Montezuma Well, and Tuzigoot include the following.

- Resource management activities would be increased through expansion of the monuments' resource stabilization program and active participation in the NPS inventory and monitoring program.
- Formal interpretive and education opportunities would be expanded.
- Orientation to the sites and other opportunities in the Verde Valley would be improved through partnerships that focus on coordinated wayfinding, marketing, increased information dissemination, and pre-trip planning services. Visitors would learn about prehistoric and historic human settlements in the Verde Valley and how each of the monument sites and other sites in the region provides opportunities to experience these stories first hand.
- At each site, interpretation through signs, programs, and cultural demonstrations would highlight the major themes.
- The National Park Service would acquire most of the privately owned lands within the legislated boundaries through trade or purchase from willing sellers, except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary. The mine tailings do not contain resources related to the purpose and significance of the monument, are highly disturbed by mining activity, and are contaminated by hazardous substances. The monument is particularly interested in acquiring the relatively intact acreage

on the bench northwest of the ruins, which has archeological sites.

- Operational efficiency would be improved through the development of workspace and storage among the three sites to replace offsite workspace and storage lost with the expiration of the General Services Administration lease with the Yavapai Apache tribe for the current maintenance facility. (The administrative headquarters under a different General Services Administration lease from that of the maintenance facility would remain in Camp Verde.
- Where possible, new facilities, such as trails, would be constructed in already disturbed areas or on existing pathways, social trails, or management use trails. Trails would be clearly marked and would avoid archeological sites. Disturbance to sensitive areas, such as archeological sites or habitat for threatened or endangered species, would also be avoided whenever possible or mitigated. (See the section “Mitigation Measures Common to All Action Alternatives.”)

MANAGEMENT ZONES AND RELATED ACTIONS AT EACH SITE

Management at each site and within each zone is described below. The application of management zones is presented on three maps:

- Alternative B – Castle Site, Montezuma Castle National Monument;
- Alternative B – Well Site, Montezuma Castle National Monument; and
- Alternative B, Tuzigoot National Monument.

Montezuma Castle

Most of the Castle site would be in the resources and research zone. This zone would emphasize resource protection and research, and the predominance of natural sounds, with limited visitor use. Visitors

would not be permitted in areas within this zone unless they were participating in an NPS-led activity.

The existing facilities for visitor services, such as the entrance road, parking lot, visitor center, and loop walk near the Castle, would be zoned interpretive historic and remain much as today. A small area at the junction of the monument entrance road and service road to the sewage lagoons would be zoned interpretive historic to support the potential addition of parking and/or a bus drop-off area.

Through guided walks at Montezuma Castle, visitors would have opportunities to view the cliff dwelling from new vantage points and to interact with (but not cross) the river. These opportunities may provide visitors with a better perspective of the architecture of the dwelling and what it may have been like to live in a cliff dwelling during prehistoric times. This alternative also would increase the diversity of activities and settings that visitors may explore.

A portion of the river corridor just south of the Castle would be zoned as interaction and discovery. This would allow some natural-surface trails with interpretive signs and spectacular views from the river valley to the Castle. The increased opportunities for self-discovery of the river would provide a better understanding of the importance of riparian and water resources to the history of the Sinagua. It may also foster an improved visitor understanding of the continued need to protect riparian resources in the Southwest and throughout the nation.

A corridor along Montezuma Castle Road and Beaver Creek Estates Road would be zoned interaction and discovery. This area would accommodate regional trail activities for horseback riding, hiking, and mountain biking.

Staff housing, the road to the sewage lagoons, the sewage lagoons, and the road to the water tanks would be in the park operations zone. This zone would allow man-

agement activities to support the monument's continued operations, and visitor use would not be permitted in these areas.

A new operations facility would be built in the administration, housing, and warehouse area. The historic maintenance building (determined eligible for listing in the National Register of Historic Places on July 13, 1994) would be rehabilitated and adaptively reused. The new facility would replace work space and storage space lost with the expiration of the GSA lease with the Yavapai Apache reservation in Camp Verde, supporting the functions of all three sites, particularly the Castle.

Montezuma Well

Most of the Montezuma Well site would be zoned resources and research. This zone would emphasize resource protection and research, and the predominance of natural sounds, with limited visitor use. Visitors would not be permitted in areas within this zone unless they were participating in an NPS-led activity.

The existing roads, two parking lots at Montezuma Well and picnic area, and trails leading to and around Montezuma Well would be zoned interpretive historic. All would remain much as today.

This alternative would increase the interpretation and interaction regarding the unique resource of Montezuma Well and its long history of affecting Native American and Euro-American farming in the area. Similar to changes at the Castle, this alternative also would provide more diverse activities and settings for visitors to explore.

Visitors would be encouraged to visit the resources associated with historic farming that are adjacent to the picnic area.

The area just south and west of the picnic area would be zoned interaction and discovery. It would provide natural-surface trails improved on existing formal and informal trail routes for visitors to hike and explore the land that was used for historic

farming activities. Visitors would be able to view the interaction of human history on the natural systems. They also would be able to find quiet places to enjoy the sights and sounds of the riparian system of Wet Beaver Creek, including excellent opportunities for bird watching.

Visitors would be able to drive to the parking lot at Montezuma Well and visit the well as they do today. A shade ramada would be constructed on the visitor contact station in the existing footprint of the parking lot near Montezuma Well. The facility would contain interpretive panels and shaded space for interaction with NPS staff and volunteers.

The current housing and maintenance area east of the Back cabin would be zoned park operations. Management activities in this zone would support the monument's continued operations, and visitor use would not be permitted.

A modest workspace and storage building would be constructed near the residential area to replace leased space in Camp Verde. Because of Montezuma Well's remote location, this building would include basic emergency services for visitors.

Tuzigoot

Most of the monument would be zoned for interaction and discovery. This would include the areas east, north, and south of the pueblo, which would provide visitors with opportunities to travel along the riparian area on natural-surface trails.

Through collaboration with partners, these trails may link with trails in Dead Horse Ranch State Park and the Coconino National Forest.

The area north of the tailings and south of Peck's Lake would be zoned resources and research. This zone would emphasize resource protection and research, and the predominance of natural sounds, with limited visitor use. Visitors would not be permitted in areas within this zone unless they were participating in an NPS-led activity.

The existing entrance road, parking lot, visitor center, trails leading to and through the pueblo, and trail to the overlook at Tavasci Marsh would be zoned interpretive historic. All would remain much as today.

This alternative would provide increased opportunities for visitors to learn about the activities associated with daily life in a hilltop pueblo and its association with nearby communities, including river communities and other hilltop pueblos. To support this objective, increased opportunities for cultural demonstrations, including craftsmanship and social activities, would be provided in and around the pueblo.

The area south of the pueblo that was zoned interpretive historic would provide access via trails to the river. Interpretive signs and programs in this area would focus on prehistoric trade activities and farming that would have been associated with life in the pueblo.

Active wetland restoration and management activities would begin at the newly acquired Tavasci Marsh on the northeast side of the pueblo. Restoration activities would focus on maintaining existing hydrologic functions by reducing the influence of Peck's Lake and restoring native vegetation. A boardwalk would be constructed across the marsh, providing access to the marsh and the trail systems of adjacent public lands. If assessment determines that there would be no conflict with preservation of significant cultural resources, the boardwalk would be constructed along an existing old road alignment to avoid new resource disturbance.

The National Park Service would allow access from the main entrance road so that Arizona State Parks can implement the *Verde River Greenway Management Plan* proposal to build a small parking area and a launch facility for small boats. These features would be on state-owned land on the east side of the monument entrance road.

The current housing and maintenance area north of the pueblo would be zoned park operations. Management activities in this zone would support the monument's continued operations, and visitor use would not be permitted in these areas. A modest workspace and storage building would be constructed near the residential area to replace space lost with the expiration of the leased work space in Camp Verde, tailored specifically for the functions and operations of Tuzigoot National Monument. Because of the monument's remote location, this building would include basic emergency services for visitors.

BOUNDARY ADJUSTMENTS, LAND PURCHASES, AND EASEMENTS

The boundary of Tuzigoot National Monument was expanded by Congress in 1978. However, until 2005, when it received 324 acres in a land exchange, the National Park Service did not own any of the land in the boundary expansion.

Approximately 467 additional acres are currently owned by Freeport McMoRan Copper and Gold, Inc. mining corporation. These lands are part of the viewshed from primary monument resources. About 300 acres are highly disturbed from mining, reclamation, and development activities by Freeport McMoRan.

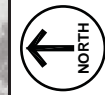
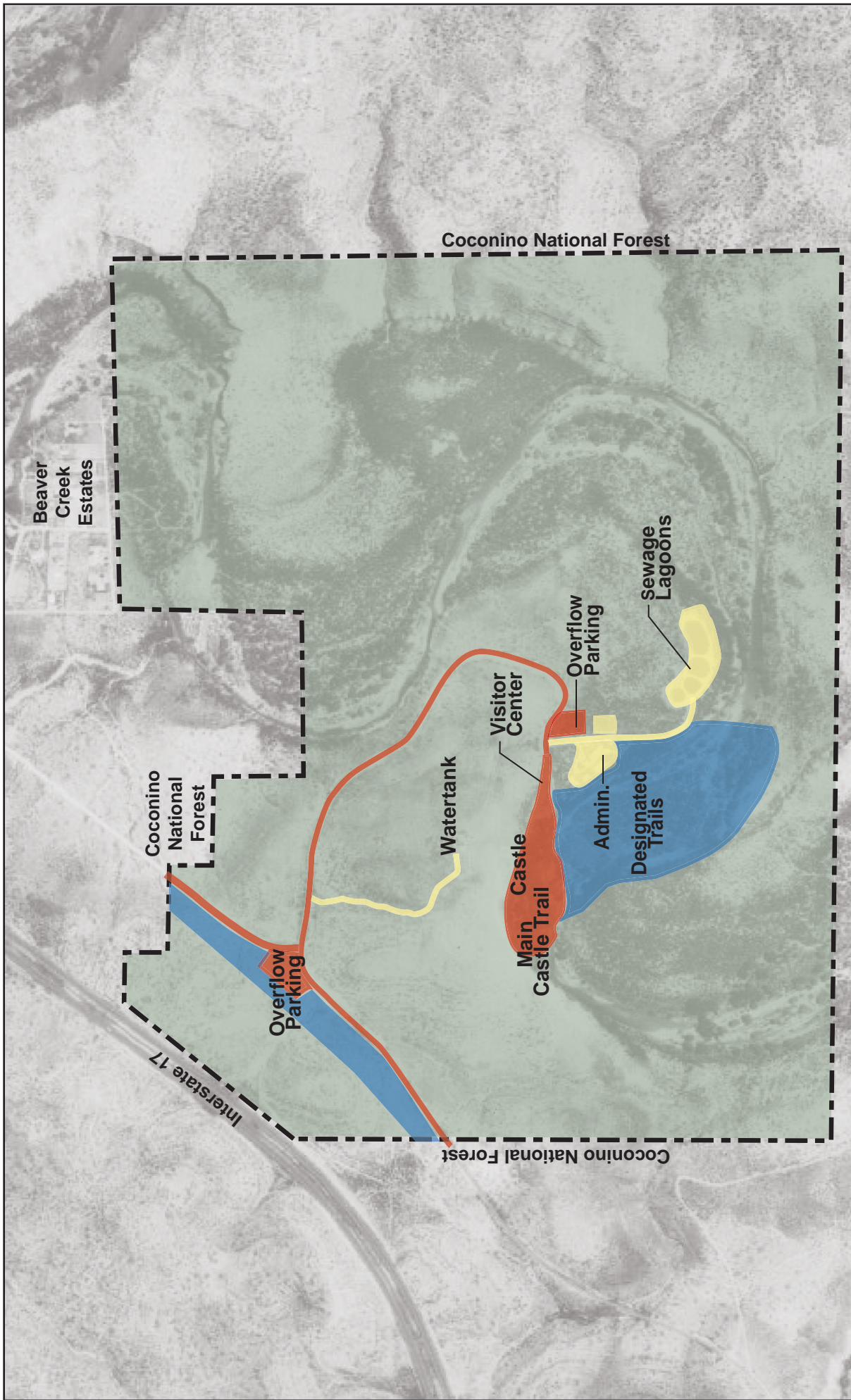
The Freeport McMoRan land on the bench to the northwest of the ruins is relatively undisturbed and contains archeological sites.

Because the mine tailings area does not contain resources related to the purpose and significance of the monument, is highly disturbed by mining activity, and is contaminated by hazardous substances, it would be removed from Tuzigoot National Monument's legislated boundary.

The National Park Service would look to acquiring the other land suitable within the monument boundary, including that owned by Freeport McMoRan Copper

and Gold, Inc. (minus the tailings), or work cooperatively with Freeport McMoRan and other entities to protect the land for public use consistent with the

general management plan zoning intent until such time as the lands are acquired by the National Park Service.



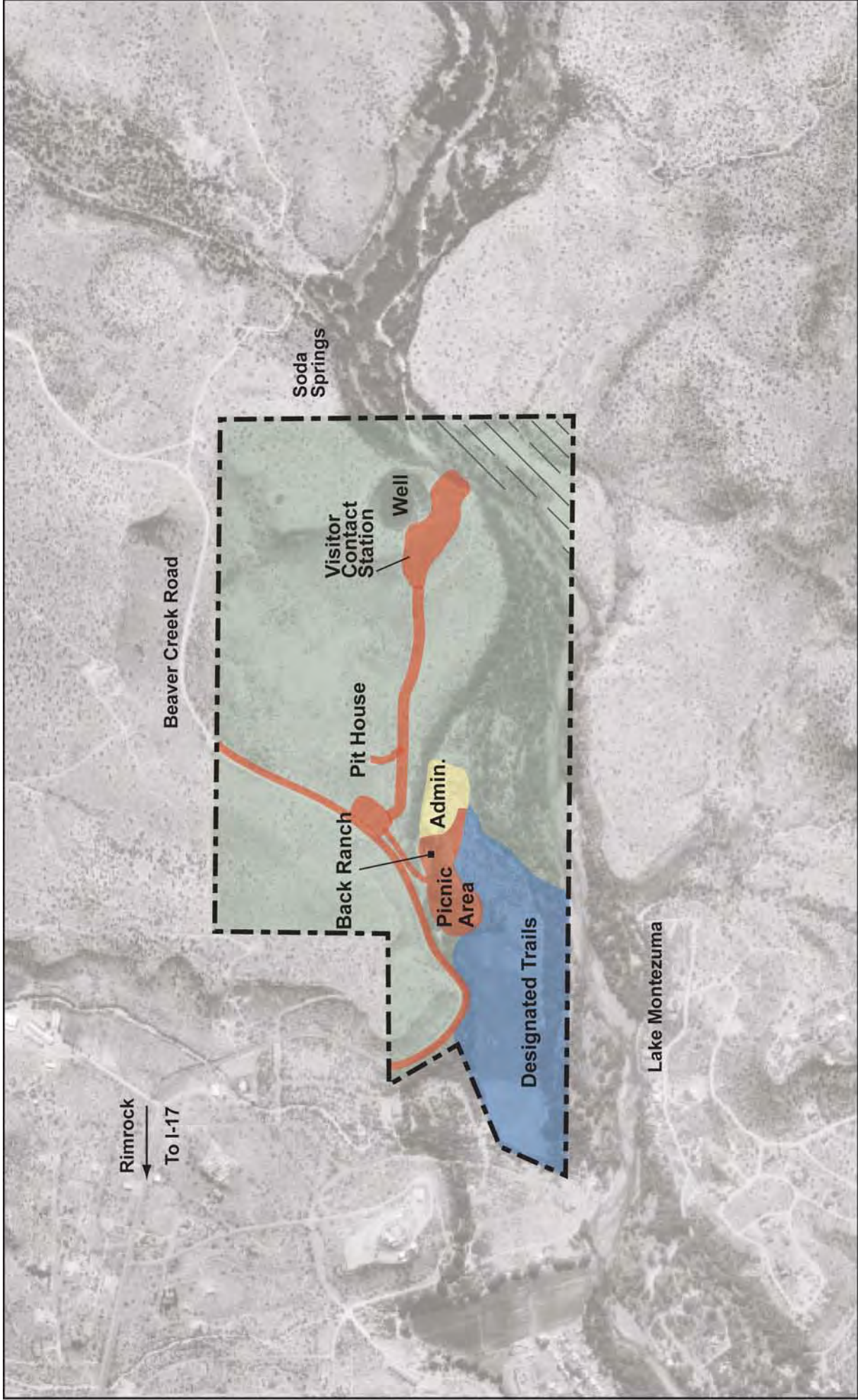
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Alternative B - Castle Site

Montezuma Castle National Monument

United States Department of the Interior / National Park Service

DSC • 309 • 20017 • August 2008



LEGEND

Management Zones

- Interpretive Historic
- Interaction and Discovery
- Park Operations
- Resources and Research
- Montezuma Well

Zoning to Take Affect If Land is Acquired

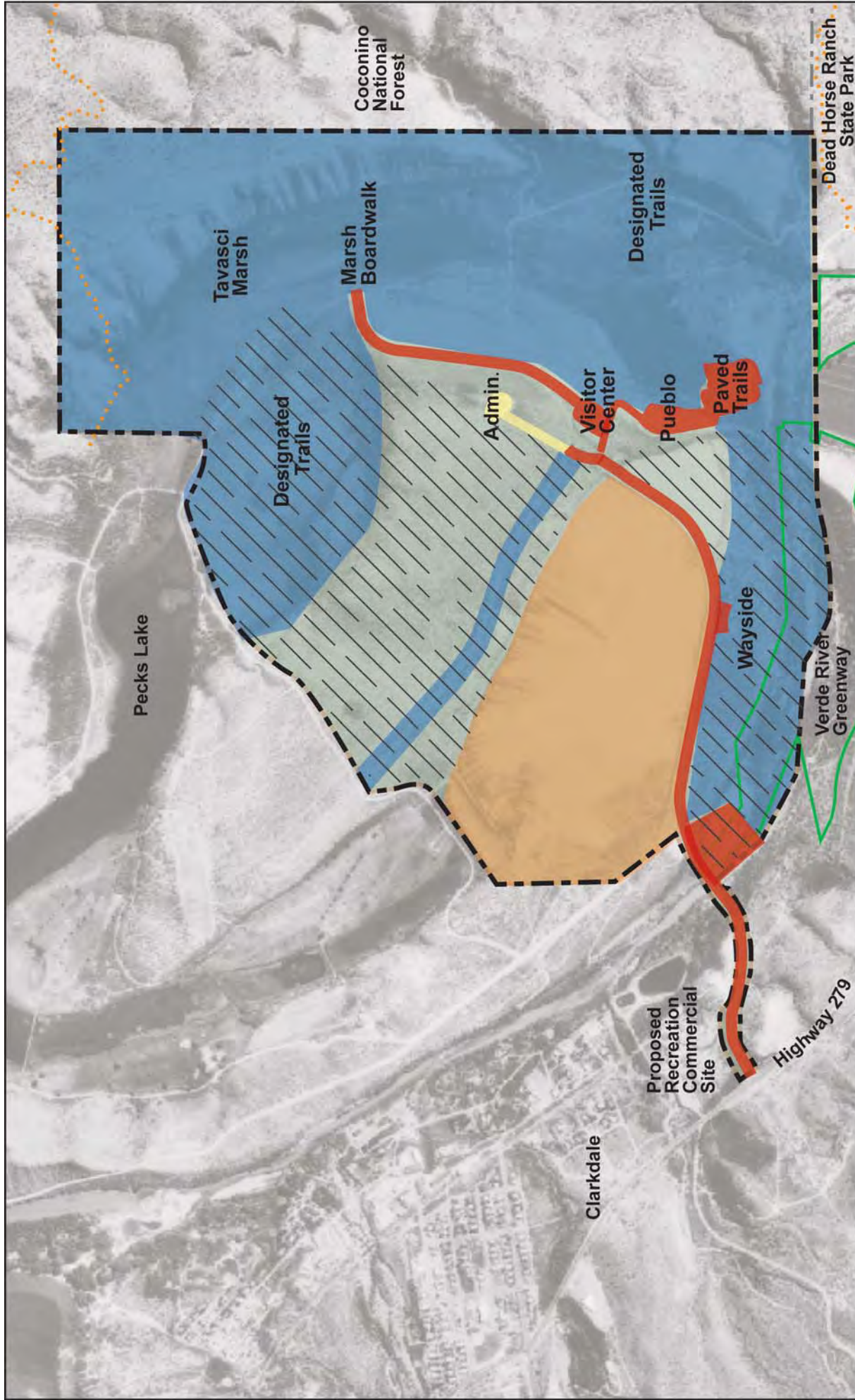
(currently privately owned)

Alternative B - Well Site

Montezuma Castle National Monument

United States Department of the Interior / National Park Service

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- LEGEND**
- Management Zones
 - Interpretive Historic
 - Interaction and Discovery
 - Park Operations
 - Resources and Research
 - Mine Tailings (privately owned)
 - Existing Trails
 - Zoning to Take Affect If Land is Acquired (currently privately owned)
 - Verde River Greenway
 - Dead Horse Ranch State Park
 - Tuzigoot National Monument

Alternative B
Tuzigoot National Monument
 United States Department of the Interior / National Park Service
 DSC • 378 • 20018 • August 2008

ALTERNATIVE C

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

The main emphasis of this alternative is to provide increased opportunities for visitors to self-discover the beauty and wonder of the natural and cultural resources of the monuments. In this alternative, resources would still receive the highest level of protection, but visitors could interact with and explore a wider range of the resources found in the monuments. Visitor contact facilities would be located at each of the three sites.

In this alternative the monuments would be considered as part of the region's public land resources. The National Park Service would emphasize partnerships with surrounding public lands agencies to provide connections to recreational and educational opportunities off site.

CONDITIONS AND ACTIONS COMMON TO ALL THREE SITES

Features of alternative C that would apply at Montezuma Castle, Montezuma Well, and Tuzigoot include the following.

- Protection of cultural resources would not change from the no-action alternative.
- Greater emphasis would be placed on visitor services and administrative facilities than in alternative B. These may be expanded in select areas such as a new headquarters at the Castle to replace administrative space in Camp Verde a new visitor center at Montezuma Well and new trails at all three sites. This would result in a slightly larger development footprint.
- More of the monuments' cultural and natural resources would be available for visitors to explore via trails. This would allow more personal contact with resources, such as guided walks along the river that would allow visi-

tors to view the cliff dwellings at the Castle. Trails would be on disturbed lands or on existing pathways, social trails, or management use trails; would be clearly marked; and would avoid archeological sites.

- Trail connection opportunities with surrounding public lands would be explored with partners to increase recreation and education activities.
- Visitors could learn about the cultural resources of the monuments and could participate in other recreational and educational opportunities such as nature hikes along the water, photography, bird watching, picnicking, and group educational programs.
- The National Park Service would acquire most of the privately owned lands within the legislated boundaries through trade or purchase from willing sellers, except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary. The mine tailings do not contain resources related to the purpose and significance of the monument, are highly disturbed by mining activity, and are contaminated by hazardous substances. The monument is particularly interested in acquiring the relatively intact acreage on the bench northwest of the ruins, which has archeological sites.
- Where possible, new facilities such as trails would be constructed in already disturbed areas. Disturbance to sensitive areas such as archeological sites and habitats for threatened or endangered species would also be avoided or mitigated whenever possible. (See the section "Mitigation Measures Common to All Action Alternatives.")
- Partnerships would be developed and enhanced with Verde Valley organizations, land owners, and government agencies to ensure awareness of the

significance of the monuments and the important role that regional activities and land uses can play in the protection of monument resources.

MANAGEMENT ZONES AND RELATED ACTIONS AT EACH SITE

Management at each site and within each zone is described below. The application of management zones is presented on three maps:

- Alternative C – Castle Site, Montezuma Castle National Monument;
- Alternative C – Well Site, Montezuma Castle National Monument; and
- Alternative C, Tuzigoot National Monument.

Montezuma Castle

Most of the Castle site would be in the resources and research zone. This zone would emphasize resource protection and research, and the predominance of natural sounds, with limited visitor use. Visitors would not be permitted in areas within this zone unless they were participating in an NPS-led activity.

The existing facilities for visitor services, such as the entrance road, parking lot, and loop walk near the Castle, would be zoned interpretive historic and remain much as today. A small area at the junction of the monument entrance road and service road to the sewage lagoons would be zoned interpretive historic to support the potential addition of parking and/or a bus drop-off area.

A new headquarters building would be constructed at the beginning of the entrance road to the monument. This facility would allow administrative activities to move on site, closer to visitor service activities.

This alternative would provide expanded opportunities to explore the riparian areas along Beaver Creek, allowing visitors to see and better understand the important

connection between humans and the water. To meet this objective, the area south of the Castle loop trail would be zoned interpretive historic, providing access to the creek and to new picnic facilities on its south bank. From this picnic location, visitors would be close to the water and have views across the river to the Castle. A new bridge crossing the creek would be constructed to be resistant to flood waters. The river corridor would be zoned interaction and discovery, providing self-guided, designated trails along the river with some interpretation.

To provide better views of the river valley and its proximity to the cliff dwelling, access to the plateau above the cliff dwelling would be provided for a small number of private vehicles at one time. The road to the water tanks and a small area near the water tanks would be zoned interpretive historic to provide vehicle access and parking. The area around the road and parking would be zoned interaction and discovery, and natural-surface trails and interpretive signs would be provided.

The pit house along the entrance road would be zoned resources and research, with a small adjacent visitor access trail and interpretive signs.

A corridor along Montezuma Castle Road and Beaver Creek Estates Road would be zoned interaction and discovery. This area would accommodate regional trail activities for horseback riding, hiking, and mountain biking.

Staff housing, the road to the sewage lagoons, and the sewage lagoons would be zoned park operations. If the increased diversity and amount of activities proposed in this alternative increases visitation levels and lengths of stay, the amount of area zoned park operations may increase to meet visitor management needs. This zone would allow management activities to support the monument's continued operations, and visitor use would not be permitted in these areas.

A new operations facility would be built in the administration, housing, and warehouse area (determined eligible for listing in the National Register of Historic Places on July 13, 1994) would be rehabilitated and adaptively reused. The new facility would replace work space and storage space lost with the expiration of the General Services Administration lease with the Yavapai Apache reservation supporting the functions of all three sites, particularly the Castle.

Montezuma Well

Most of the Montezuma Well site would be zoned resources and research. This zone would emphasize resource protection and research, and the predominance of natural sounds, with limited visitor use. Visitors would not be permitted in areas within this zone unless they were participating in an NPS-led activity.

The existing roads, two parking lots at Montezuma Well and picnic area, and trails leading to and around Montezuma Well would be zoned interpretive historic. All would remain much as today.

To increase visitor opportunities, a new visitor center would be constructed at the entrance of the road to Montezuma Well. The purpose of the visitor center would be to serve as a focal point for visitor contact, to better distribute visitation within the monument, and to provide broader visitor orientation within the Verde Valley. Interpretation would focus on early regional land use patterns and migratory routes. It would include exhibit space, restrooms, and staff office space. This would increase visitor orientation and interpretation services on site and would provide a better introduction and understanding of the resources and regional context of the Montezuma Well site. The visitor center would be no more than 4,000 square feet. It would include parking, an upgraded access road, and development of a new water supply.

This alternative would expand opportunities for visitors to connect with the natural environment by providing additional trails. Some would be located to emphasize the long history of humans' connection to water in the area. Visitors could explore these trails for recreation, nature observation, and interpretation.

- The area in the southwest corner of the Montezuma Well site would be zoned interaction and discovery to allow designated natural-surface trails to and along the riparian area of Wet Beaver Creek.
- A natural-surface, designated trail would be located near the prehistoric ditch that extends from Montezuma Well and along Wet Beaver Creek. This trail would also follow the rim along the north side of Montezuma Well.
- A trail would extend from the visitor center to Montezuma Well, following the road.

The areas around facilities that would be zoned as Resources and Research would be protected from visitor impacts through signing, interpretive and educational information, and through appropriate facility designs that would discourage visitor access to areas of sensitive resources.

The current housing and maintenance area east of the Back cabin would be zoned park operations. Management activities in this zone would support the monument's continued operations, and visitor use would not be permitted.

Tuzigoot

Most of the monument would be zoned interaction and discovery. Visitors would find expanded opportunities to explore additional areas of the monument. In these areas, natural-surface trails may be designated. If assessment determines that there would be no conflict with preservation of significant cultural resources, mountain bicycling opportunities may al-

so be provided on old roadbeds in the area. Trail connections with neighboring federal and state lands would be explored. To accomplish this objective, partnerships with Dead Horse Ranch State Park, the Verde River Greenway, and Coconino National Forest would be expanded.

The existing entrance road, parking lot, visitor center, trails leading to and through the pueblo, and trail to the overlook at Tavaschi Marsh would be zoned interpretive historic. All would remain much as today. A boardwalk would be constructed across the marsh, providing access to the marsh and the trail systems of adjacent public lands. If assessment determines that there would be no conflict with preservation of significant cultural resources, the boardwalk would be constructed along an existing old road alignment to avoid new resource disturbance.

Most of the area directly around the road, parking lot, pueblo, and administrative facilities would be zoned resources and research. This would emphasize resource protection and research, with limited visitor use. Visitors would not be permitted in these areas unless participating in an NPS-led activity.

The National Park Service would cooperate with Arizona State Parks on imple-

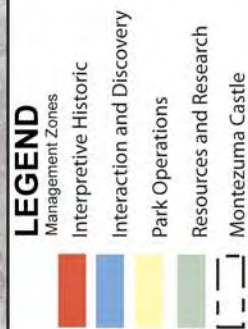
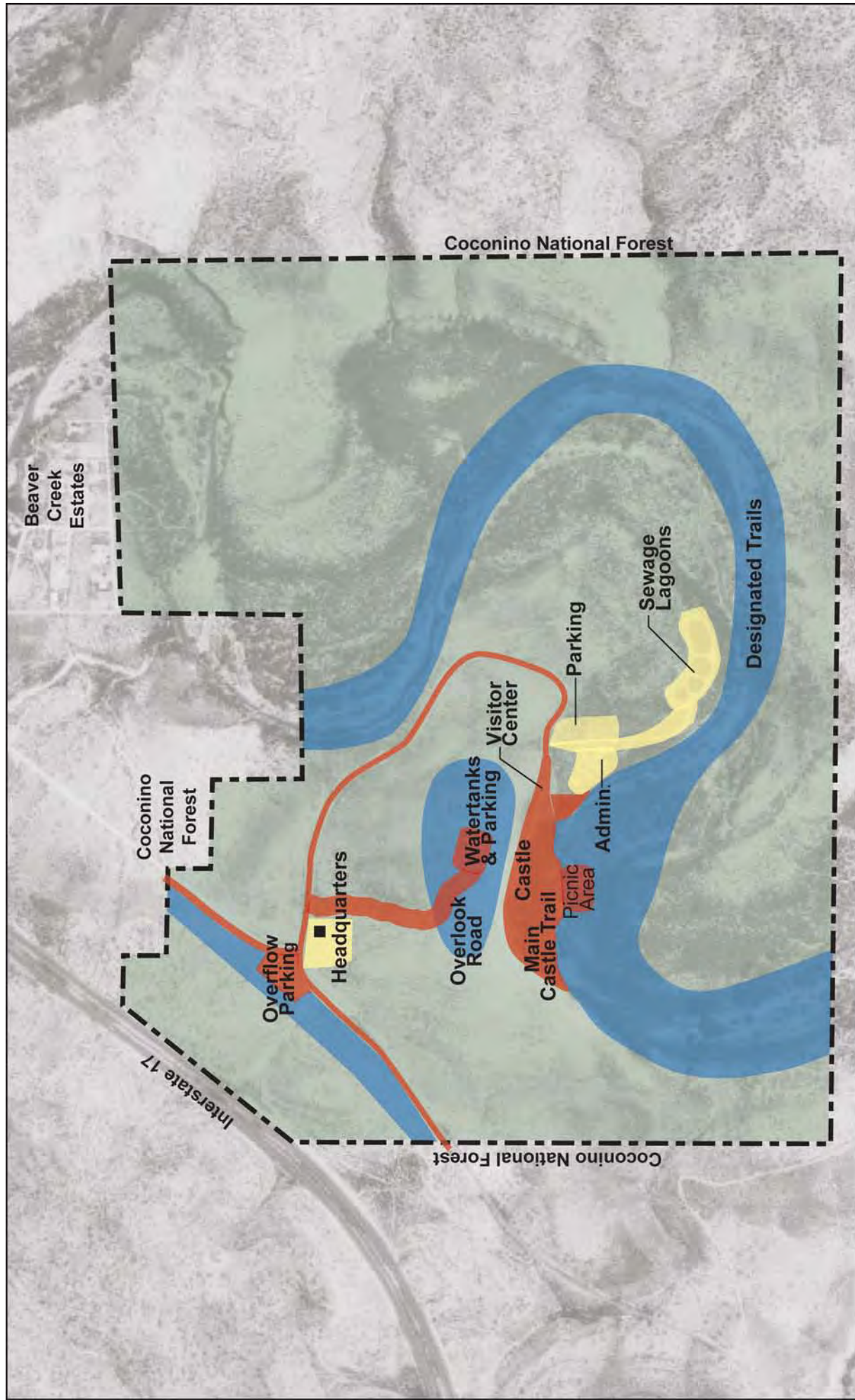
menting the *Verde River Greenway Management Plan* proposal to build a small parking area and a launch facility for small boats. These features would be on state-owned land on the east side of the monument entrance road.

The current housing and maintenance area north of the pueblo would be zoned park operations. Management activities in this zone would support the monument's continued operations, and visitor use would not be permitted in these areas.

BOUNDARY ADJUSTMENTS, LAND PURCHASES, AND EASEMENTS

As described in alternative B, the mine tailings area would be removed from Tuzigoot National Monument's legislated boundary.

The National Park Service would look to acquiring the land within the monument boundary, including that owned by the Freeport McMoRan Copper and Gold, Inc. (minus the tailings), or work cooperatively with Freeport McMoRan and other entities to protect the land for public use consistent with the general management plan zoning intent until such time as the lands are acquired by the National Park Service.



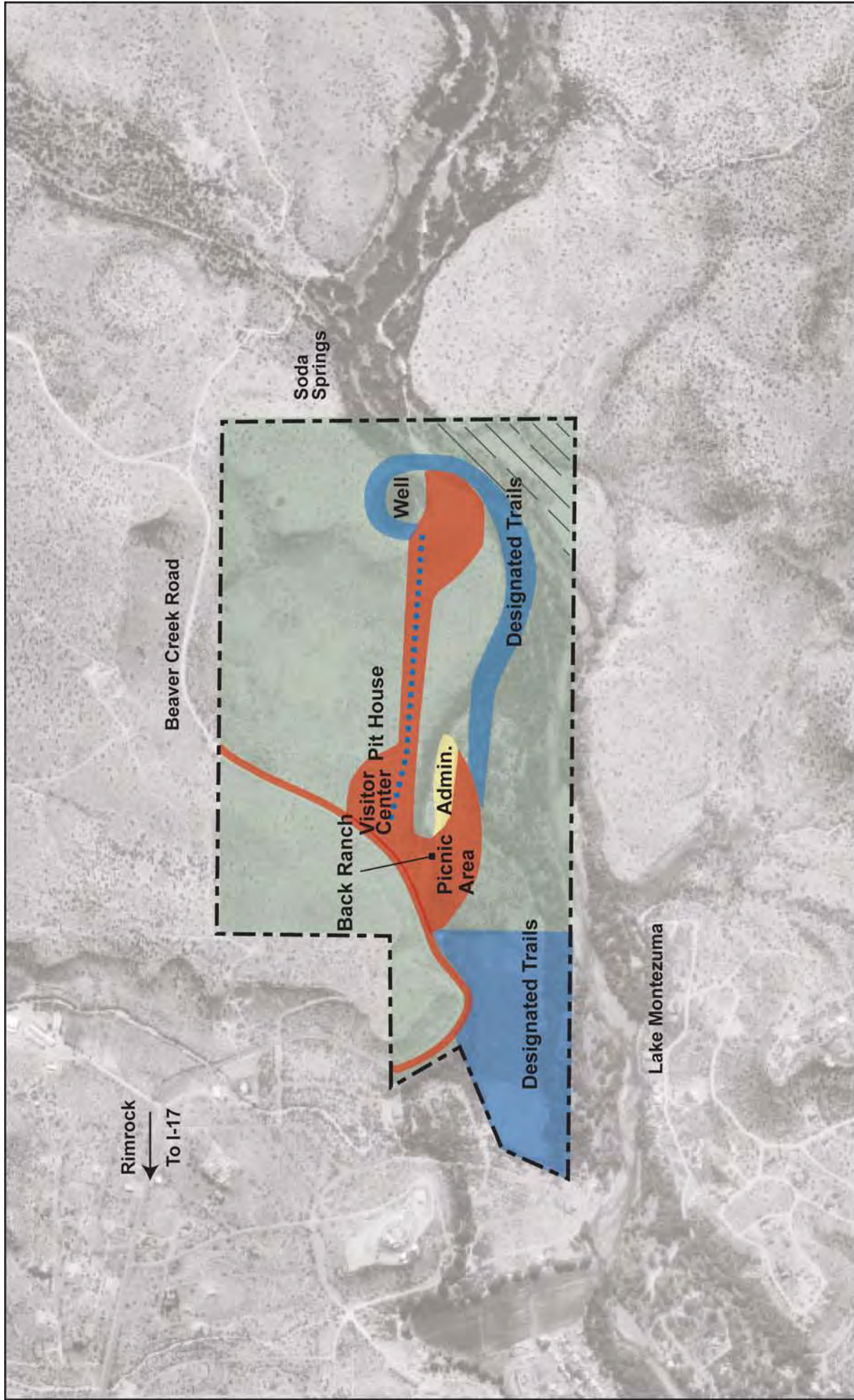
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Alternative C - Castle Site

Montezuma Castle National Monument

United States Department of the Interior / National Park Service

DSC • 309 • 20018 • August 2008



LEGEND

Management Zones

Interpretive Historic

Interaction and Discovery

Park Operations

Resources and Research

Montezuma Well



Zoning to Take Affect if Land is Acquired
(currently privately owned)



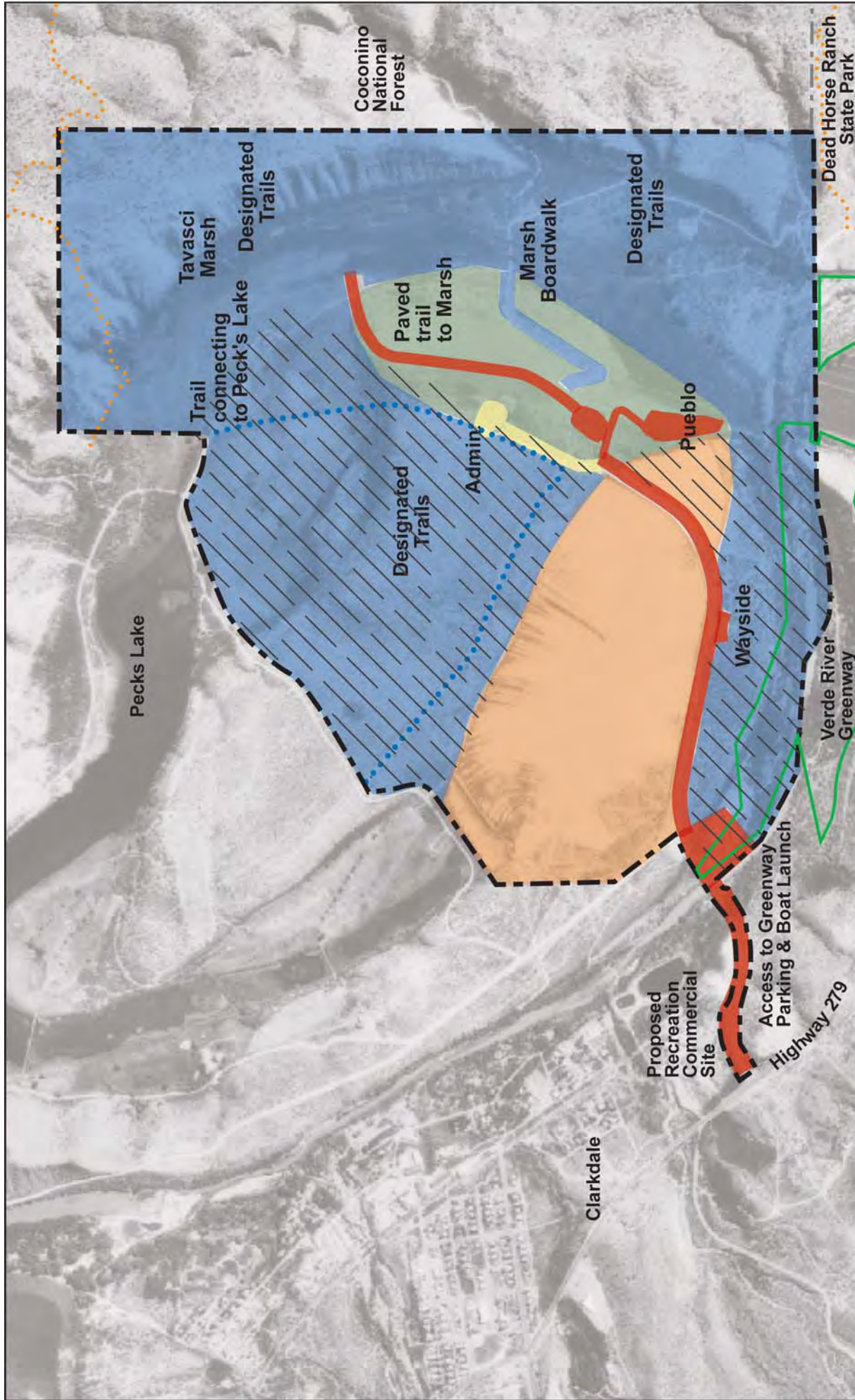
Proposed Trails - Separated from Road

Alternative C - Well Site












Montezuma Castle National Monument

United States Department of the Interior / National Park Service

DSC • 309 • 20020 • August 2008



LEGEND

- | | | | | |
|--|---|---|--|---|
|  Interpretive Historic |  Interaction and Discovery |  Park Operations |  Resources and Research |  Mine Tailings (privately owned) |
|  Proposed Trails - Unpaved Bike Trail |  Existing Trails |  Zoning to Take Affect If Land is Acquired (currently privately owned) |  Verde River Greenway |  Dead Horse Ranch State Park |
| | | |  Tuzigoot National Monument | |

Alternative C
Tuzigoot National Monument
 United States Department of the Interior / National Park Service
 DSC • 378 • 20019 • August 2008

COST ESTIMATES

DEVELOPMENT OF COST ESTIMATES

Class C cost estimates were developed to help determine which alternative gives the National Park Service the greatest benefits for the most reasonable cost. These are not to be used for budgetary purposes or implementation funding requests.

The cost estimates for all of the alternatives contain the same elements and were developed with the same general assumptions to allow consistency and comparability among alternatives.

Initial One-Time Costs

One-time costs included the following:

- New development (including NPS infrastructure costs);
- Major rehabilitation or restoration of existing facilities;
- Interpretive media, such as audiovisual materials, exhibits, waysides, and publication; and
- Resource management and visitor service costs, such as resource and visitor inventories, implementation planning, and compliance.

NPS Facilities Model

The National Park Service has developed a model for estimating the costs of several types of facilities, such as visitor centers and maintenance facilities, based on factors unique to each national park system unit. This model was used in estimating the square footage of facilities to be constructed.

SUMMARY OF COMPARATIVE COSTS

The National Park Service recognizes that this is a long-term plan, and in the framework of the plan, monument managers would take incremental steps to reach monument management goals and objectives. Although some of the actions can be accomplished with little or no funding, some actions would require more detailed implementation plans, site-specific compliance, and additional funds.

The cost figures shown here and throughout the plan are intended only to provide an estimate of the relative costs of alternatives. NPS and industry cost estimating guidelines were used to develop the costs (in 2008 dollars) to the extent possible, but the estimates should not be used for budgeting purposes. Specific costs will be determined in subsequent, more detailed planning and design exercises, and considering the design of facilities, identification of detailed resource protection needs, and changing visitor expectations. Actual costs to the National Park Service will vary depending on if and when the actions are implemented, and on contributions by partners and volunteers.

The implementation of the approved plan, no matter which alternative is selected, will depend on future NPS funding levels and servicewide priorities, and on partnership funds, time, and effort. The approval of a general management plan does not guarantee that funding and staffing needed to implement the plan will be forthcoming. Full implementation of the plan could be many years in the future.

Table 2 presents the cost summaries for the alternatives. A detailed list of cost elements for each alternative is presented in appendix C.

TABLE 2: COST SUMMARY FOR EACH ALTERNATIVE

	Alternative A: No-Action	Alternative B	Alternative C
Annual operating costs (ONPS) ^{a/}	\$1,454,000 No additional staff.	\$1,802,000 Additional staff. ^{b/} 1 GS9 ranger - community outreach 1 GS9 ranger - interpretation 2 WG7 maintenance mechanics 1 GS11 biologist	\$1,802,000 Additional staff. ^{b/} 1 GS9 ranger - community outreach 1 GS9 ranger - interpretation 2 WG7 maintenance mechanics 1 GS11 biologist
Currently planned costs (one-time costs) ^{c/}	\$1,034,000	\$1,034,000	\$1,034,000
Montezuma Castle - Castle Unit			
Expand parking lot (25 cars)	\$0	\$65,000	\$0
Expand parking lot (35 cars)	\$0	\$0	\$90,000
Construct park headquarters	\$0	\$0	\$1,500,000
Rehabilitate historic maintenance building	\$0	\$200,000	\$200,000
Designated trails	\$0	\$50,000	\$150,000
Relocate picnic area	\$0	\$0	\$200,000
Construct vehicle access/parking on plateau	\$0	\$0	\$323,000
Operations Facility	\$0	\$1,000,000	\$1,000,000
Montezuma Castle - Well Unit			
Construct visitor ramada	\$0	\$250,000	\$0
Construct visitor center ^{c/}	\$0	0	\$6,500,000
Designated trails	\$0	\$50,000	\$150,000
Construct modest work space and storage building	\$0	\$490,000	\$0
Tuzigoot			
Designated trails	\$0	\$150,000	\$200,000
Construct marsh boardwalk (1000')	\$0	\$270,000	\$270,000
Construct modest work space and storage building	\$0	\$490,000	\$0
Restore and rehabilitate Tavaschi Marsh	\$0	\$953,000	\$0
Total Costs ^{d/}	\$2,488,000	\$6,804,000	\$13,419,000
Total one-time costs ^{e/}	\$1,034,000	\$5,002,000	\$11,617,000
Facility costs	\$0	\$3,015,000	\$10,583,000
Non-facility costs	\$0	\$953,000	\$0

a/ The base year for all estimates is 2007. Annual operating costs are the total costs per year for maintenance and operations associated with each alternative, including utilities, supplies, staff salaries and benefits, leasing, and other materials. Cost and staffing estimates assume that the alternative is fully implemented as described in the narrative.

b/ The total number of full-time equivalents (FTE) is the number of person-years of staff required to maintain the assets of the monuments in good level, provide acceptable visitor services, protect resources, and generally support the monuments' operations. The FTE number indicated ONPS-funded NPS staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.

c/ The visitor center would be no more than 4,000 square feet. It would include parking, an upgraded access road, and development of a new water supply.

d/ Total costs are the sum of facility costs, non-facility costs and annual operating cost.

e/ Total one-time cost are sum of facility costs and non-facility costs.

USER CAPACITY

This section includes potential indicators, standards, and potential management actions for each management zone that would be implemented as needed during the life of this plan. The recommended indicators and standards help translate the broader descriptions of desired conditions, which are qualitative in nature, into something measurable. The potential indicators have been suggested for monitoring key aspects of visitor experiences and resources at the monuments. As indicators are identified in the future, standards that represent the points where visitor experience and resource conditions become unacceptable in each zone would be defined based on management goals.

Existing facilities generally provide good visitor opportunities, protect monument resources, and, based on projected trends, will continue to function well. However, high volumes of use in the peak season can cause crowding in the visitor center at Montezuma Castle and along the main trail to the Castle viewing area. If use increases, or the patterns or timing of use changes, crowding may get worse.

Because of the occasional problems of crowded conditions at the Castle, the indicator for “number of people per hour” is being developed for this general management plan. This indicator and standard will ensure that staff take appropriate action to disperse use throughout the monument or during the day or season to mitigate crowded conditions, as needed.

The monument staff is already monitoring bus arrivals. In the future it may be appropriate to actively disperse bus use throughout the day by requiring buses to arrive and depart at defined times and reduce use during the mid-day, peak hours. The increases in trail opportunities and educational programming in the action alternatives should improve visitor opportunities and may disperse use away from current high-use areas.

The monument staff will continue monitoring use levels and patterns. If these change significantly in any of the zones, the staff will initiate more systematic monitoring of user capacity indicators to ensure protection of desired conditions.

The potential indicators include, but are not limited to the topics of vandalism, looting, or theft of resources; crowding at attraction points; litter; user-created trails; human-caused noise; and introduction of invasive plants. Before new areas of the monuments in the interaction and discovery zone are opened to visitors, the staff will select key indicators to monitor like those proposed in the zone description. Since use patterns have not been established in these areas, it is important for the monument staff to monitor conditions to ensure that new use in these areas does not have unexpected or unintended consequences.

The selection of any indicators and standards for monitoring or for implementation of any management actions that affect use would comply with the National Environmental Policy Act, the National Historic Preservation Act, and other laws, regulations, and policies as needed. The National Park Service would also inform the public of progress and proposed revisions to indicators and standards through regular reporting on the user capacity program.

PARK OPERATIONS ZONE

No indicators are identified for user capacity because public use is not generally permitted in this zone.

INTERPRETIVE HISTORIC ZONE

This zone includes high levels of development and physical controls on visitor movement, which should substantially control visitor use impacts. Use levels and patterns would be continually monitored

in this zone to identify trends based on data collected at the entrance gate, on traffic counters, and through regular observations by monument staff.

The indicator and standard for the number of people per hour for entry to Montezuma Castle would be implemented. The indicator, related monitoring, and management actions are below. Monument staff are developing the standard for this indicator.

The indicator will be the number of people per hour entering the monument. Other indicators that may be considered in this zone for future monitoring at any of the popular sites in the monuments might include:

- The number of people at a given time at other major points of attraction, such as the Castle's visitor center, the rim overlooks at Montezuma Well, or inside or on top of the Tuzigoot Pueblo;
- Litter along main pathways;
- Vegetation trampling in high use areas, such as the Montezuma Well picnic area; and
- The condition of archeological resources close to public use, such as the walls of the Tuzigoot Pueblo or the walls of the dwelling structures at Montezuma Well.

Monument staff will periodically monitor the indicator using methods that may include traffic counters, cash-register receipts, and observations at select times throughout the day during both peak and off-peak season.

If monitoring indicates that the indicator is approaching the standard, future management actions could include any or all of the following:

- Implement voluntary redistribution of visitor use throughout the day, week, or season. For example, this could include visitor education to alert visitors to less busy times of the day, week, or

season to plan their trips; and the use of intelligent transportation system (ITS) signs in town that indicate that the Castle is full to encourage visitors to delay their arrival.

- Require mandatory redistribution of visitor use during peak times. Under this approach, visitor reservations may be required to visit the Castle during peak hours of peak days, or tour bus operators may be required to manage the arrival of their vehicles to off-peak times, days, or months.
- Restrict visitor use. This could include actions such as the closure of the parking lot and/or loop trail during peak hours of peak-season days.

Other potential management actions to address changes in conditions could include expanding education and orientation messages, restoring disturbed sites, redirecting use to less busy areas, regulating visitor use (for example, reducing parking capacity), and increasing physical controls on use, such as installing fencing or other barriers.

INTERACTION AND DISCOVERY ZONE

This zone includes low levels of development and physical controls on visitor movement. Use levels and patterns will be monitored to identify trends in use through data collected as part of regular monument staff patrols. Other indicators that may be considered in this zone for future monitoring might include user-created trails, litter, human-caused noise, looting and vandalism of archeological sites near designated trails, and invasive plants. The range of potential management actions to address changes in conditions could include expanding education (particularly "leave no trace" messages); restoring disturbed sites; restricting use through actions such as a permit system, closure of areas, or guided only trips; and increasing enforcement patrols.

RESOURCES AND RESEARCH ZONE

This zone would have low levels of use, all of which would be managed on guided tours, so no indicators of user capacity are

proposed. However, monument staff would monitor for vandalism, looting, or theft of archeological resources.

MITIGATION MEASURES COMMON TO ALL ALTERNATIVES

Congress charged the National Park Service with managing the lands under its stewardship “in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (NPS Organic Act, 16 United States Code, section 1). As a result, the National Park Service routinely evaluates and implements mitigation whenever conditions occur that could adversely affect the sustainability of national park system resources.

To ensure that implementation of the action alternatives protects unimpaired the natural and cultural resources and the quality of the visitor experience, a consistent set of mitigation measures would be applied to actions proposed in this plan.

The following mitigation measures and best management practices would avoid, minimize, or offset potential impacts from implementation of the alternatives. These measures would apply to all alternatives.

CULTURAL RESOURCES

The National Park Service would preserve and protect, to the greatest extent possible, resources that reflect human occupation of the monuments. Specific mitigation measures include the following:

- Subject projects to site-specific planning and compliance. Make efforts to avoid adverse impacts through use of the *Secretary of the Interior's Standards for Archeology and Historic Preservation* and by using screening and/or sensitive design that would be compatible with historic resources. If adverse impacts could not be avoided, mitigate those impacts through a consultation process with all interested parties.
- Inventory all unsurveyed areas in the monuments for archeological, historical, and ethnographic resources and for cultural and ethnographic landscapes. Conduct archeological surveys in unsurveyed areas where development would occur to determine the extent and significance of archeological resources in the areas.
- Document cultural and ethnographic landscapes in the monuments and identify treatments to ensure their preservation.
- Conduct additional background research, resource inventory, and National Register of Historic Places evaluation where information about the location and significance of cultural resources is lacking, including development of a multiple property historic context for national register eligibility for archeology in the Verde Valley. Incorporate results of these efforts into site-specific planning and compliance documents.
- Should archeological resources be discovered during any construction, stop work in that location until the resources are properly recorded by the National Park Service and evaluated under the Archeological Resources Protection Act and the eligibility criteria of the National Register of Historic Places. Because stopping construction can be expensive, preconstruction resource inventories and assessments will be conducted to minimize the probability of work stoppage. If, in consultation with the Arizona state historic preservation officer, the resources are determined eligible for listing, implement appropriate measures either to avoid further resource impacts or to mitigate the loss or disturbance of the resources.
- Avoid or mitigate impacts on ethnographic resources. Mitigation could include identification of and assistance in accessing alternative resource gathering areas, continuing to provide

access to traditional use and spiritual areas, and screening new development from traditional use areas.

- Conduct additional background research, resource inventory, and National Register of Historic Places evaluation where information about the location and significance of cultural resources is lacking. Incorporate the results of these efforts into site-specific planning and compliance documents.
- Mitigation measures include documentation according to standards of the Historic American Buildings Survey / Historic American Engineering Record (HABS/HAER) as defined in the Re-engineering Proposal (October 1, 1997). The level of this documentation, which includes photography, archeological data recovery, and/or a narrative history, would depend on significance (national, state, or local) and individual attributes (such as an individually significant structure or individual elements of a cultural landscape) and be determined in consultation with the state historic preservation officer. When demolition of a historic structure is proposed, architectural elements and objects may be salvaged for reuse in rehabilitating similar structures, or they may be added to the monuments' museum collections. In addition, the historical alteration of the human environment and reasons for that alteration would be interpreted to monument visitors.
- Wherever possible, locate projects and facilities in previously disturbed or existing developed areas. Design facilities to avoid known or suspected archeological resources.
- Whenever possible, modify project design features to avoid effects on cultural resources. New developments would be relatively limited and would be located on sites that blend with cultural landscapes and are not adjacent

to ethnographic resources. If necessary, use vegetative screening to minimize impacts on cultural landscapes and ethnographic resources.

- Encourage visitors through interpretive programs to respect, and leave undisturbed, tribal offerings and archeological resources.
- Strictly adhere to NPS standards and guidelines on the display and care of artifacts. This would include artifacts used in exhibits in the visitor center. Irreplaceable items would be kept above the 500-year floodplain.

NATURAL RESOURCES

Air Quality

Mitigation measures to minimize, avoid, and offset adverse effects to air quality could include implementation of a dust abatement program for any construction. Standard dust abatement measures could include the following elements:

- Water or otherwise stabilize soils.
- Cover haul trucks.
- Employ speed limits on unpaved roads.
- Minimize vegetation clearing.
- Revegetate after construction.

Nonnative and Exotic Species

Implement a noxious weed abatement program. Standard measures could include the following elements:

- Ensure that construction-related equipment arrives on site free of mud or seed-bearing material.
- Certify all seed and straw material as weed-free.
- Identify areas of noxious weeds prior to construction.
- Treat noxious weeds or noxious weed topsoil before construction by me-

thods such as topsoil segregation, storage, or herbicide treatment.

- Revegetate with appropriate native species.

Natural Sounds

Standard noise abatement measures that would be implemented during construction to mitigate impacts to natural soundscapes could include the following elements:

- Schedule work to minimize impacts on nearby noise-sensitive uses.
- Use the best available noise control techniques wherever feasible.
- Use hydraulically or electrically powered impact tools when feasible.
- Locate stationary noise sources as far from sensitive uses as possible.
- Site and design facilities to minimize objectionable noise.

Soils

Mitigation measures to minimize, avoid, and offset adverse effects to soils could include the following elements:

- Build new facilities on soils suitable for development.
- Minimize soil erosion by limiting the time that soil is left exposed and by applying other erosion control measures, such as erosion matting, silt fencing, and sedimentation basins in construction areas to reduce erosion, surface scouring, and discharge to water bodies.
- Once work is completed, revegetate construction areas with native plants in a timely manner.

Threatened and Endangered Species and Species of Concern

Mitigation actions would occur during normal monument operations as well as before, during, and after construction to

minimize immediate and long-term impacts to rare, threatened, and endangered species. These actions would vary by specific project and area. Many of the measures listed below for vegetation and wildlife also would benefit rare, threatened, and endangered species by helping to preserve habitat. Mitigation actions specific to rare, threatened, and endangered species would include the following:

- Conduct surveys for rare, threatened, and endangered species as warranted.
- Design and site facilities and actions to avoid adverse effects on rare, threatened, and endangered species. If avoidance is infeasible, minimize and compensate adverse effects on rare, threatened, and endangered species as appropriate and in consultation with the appropriate resource agencies.
- Develop and implement restoration and/or monitoring plans as warranted. Plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.
- Implement measures to reduce adverse effects of nonnative plants and wildlife on rare, threatened, and endangered species.
- Manage visitor use and access in rare, threatened, or endangered species' habitats to avoid, offset, and minimize potential adverse effects to the habitats or species. This could include trail or area closures, temporary or seasonal restrictions, or rerouting of visitor access.

Vegetation

Mitigation measures to minimize, avoid, and offset adverse effects to vegetation could include the following:

- Monitor areas used by visitors, such as trails, for signs of native vegetation disturbance. Use public education, revegetation of disturbed areas with native plants, erosion control measures,

and barriers to control potential impacts on plants from trail erosion or the creation of social trails.

- Designate river access and crossing points, and use barriers and closures to prevent trampling and loss of vegetation in other riparian areas.
- Develop revegetation plans for disturbed areas, including construction sites, and require the use of native species. Revegetation plans should specify such features as seed and plant sources, seed and plant mixes, and soil preparation. Use salvaged vegetation to the extent possible.

Water Resources

To prevent water pollution during construction, mitigation would include the following:

- Use erosion control measures.
- Minimize discharge to water bodies.
- Regularly inspect construction equipment for leaks of petroleum and other chemicals.

During ongoing operation of the monuments, it may be appropriate to build runoff filtration or sedimentation systems to minimize water pollution from larger parking areas.

Wildlife

Mitigation measures to minimize, offset, or avoid adverse effects on wildlife could include the following:

- Employ techniques to reduce impacts on wildlife, including visitor education programs, restrictions on visitor activities, and monument ranger patrols.
- Implement a natural resource protection program. Standard measures would include construction scheduling, biological monitoring, erosion and sediment control, use of fencing or other means to protect sensitive resources adjacent to construction, re-

moval of all food-related items or rubbish, topsoil salvage, and revegetation. This could include specific construction monitoring by resource specialists as well as treatment and reporting procedures.

- Manage visitor use and access to avoid particularly sensitive wildlife habitats, such as nesting or foraging areas, or times when wildlife may be more susceptible to disturbance, such as breeding or nesting seasons.

Wetlands

To avoid adverse effects on wetlands, the National Park Service would do the following:

- Delineate wetlands and apply protection measures during construction. Wetlands would be delineated by qualified NPS staff or certified wetland specialists and clearly marked before construction work.
- Design and install boardwalks for interpretive purposes and to minimize impacts to vegetation and wildlife.
- Perform construction activities cautiously to prevent damage caused by equipment, erosion, and siltation.
- Actively work to remove nonnative plants/animals and restore natural water flows.

VISITOR SAFETY AND EXPERIENCES

Visitor safety, use, and experience would be protected and enhanced with the following:

- Implement measures to reduce adverse effects of construction on visitor safety and experience.
- Continue directional signs and education programs to promote understanding among visitors.
- Implement adaptive visitor use management, as outlined in the user capac-

ity section of this plan, when resource and visitor experience conditions trend toward or violate a user capacity standard.

- Employ management strategies such as visitor education, site management, visitor use regulations, rationing or reallocation of visitor use, and enforcement.

HAZARDOUS MATERIALS

Mitigation measures to minimize, offset, or avoid potential exposure to or adverse effects from hazardous materials would include the following:

- Implement a spill prevention and pollution control program for hazardous materials.
- Employ best management practices for hazardous materials storage and handling, and for spill containment, cleanup, and reporting.
- Limit refueling and other activities involving hazardous materials to upland and or non-sensitive sites.

SCENIC RESOURCES

Mitigation measures are designed to minimize visual intrusions. These include the following:

- Where appropriate, use facilities such as boardwalks and fences to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints.
- Design, site, and construct facilities to avoid or minimize adverse effects on

natural and cultural resources and visual intrusion into the natural viewshed and/or landscape.

- Provide vegetative screening where appropriate.

SOCIOECONOMICS

During the future planning and implementation of the approved management plan for the monuments, the National Park Service would work with local communities and county governments to further identify potential impacts and mitigation measures that would best serve the interests and concerns of both the National Park Service and the local communities. Partnerships would be pursued to improve the quality and diversity of community amenities and services.

SUSTAINABLE DESIGN AND AESTHETICS

Projects would avoid or minimize adverse impacts on natural and cultural resources. Development projects, such as buildings, utilities, roads, bridges, and trails, or reconstruction projects, such as road improvements, building rehabilitation, and utility upgrades, would be designed to work in harmony with the surroundings, particularly in historic districts. Projects would reduce, minimize, or eliminate air and water non-point-source pollution. Projects would be sustainable whenever practicable, by recycling and reusing materials, minimizing materials, minimizing energy consumption during the construction, and minimizing energy consumption throughout the lifespan of the project.

FUTURE STUDIES AND IMPLEMENTATION PLANS NEEDED

After this general management plan for the monuments is completed and approved, other more detailed studies and plans would be needed to implement specific actions. As required, additional environmental compliance (National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies), and public involvement would be conducted, as articulated in *Director's Order 75A: Civic Engagement and Public Involvement*. Additional studies would include, but would not be limited to, the following:

- Boundary adjustments at Tuzigoot National Monument to remove the mine tailings.
- Comprehensive ethnographic overviews and assessments (including ethnobotanical studies) at both national monuments.
- Historic resource studies at both national monuments.
- Cultural landscape inventories at both monuments to identify specific strategies and determine priorities for the management and protection of these resources.
- Comprehensive interpretive plan that outlines specific interpretive programming and services at both monuments (currently underway).
- Restoration plan for Tavaschi Marsh to outline strategies for returning it to a more naturally functioning and stable condition.
- Implementation plans, and site-specific compliance, if necessary, for specific actions within this general management plan, such as increased parking at Montezuma Castle and a visitor contact station at Montezuma Well.
- Site-specific compliance for proposed actions that could impact floodplains or wetlands or their associated values in all three sites of the monument. Compliance could include statements of findings for actions not exempt under *Director's Order 77-1: Wetlands Management* or *Director's Order 77-2: Floodplain Management*.
- Tuzigoot administrative history.
- Boundary surveys after land acquisitions then upgrade and post boundary fence.
- Native plants restoration and interpretative trails development at Montezuma Well National Monument.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will best promote the national environmental policy as expressed in section 101(b) of the National Environmental Policy Act of 1969. It is determined by applying the criteria in the National Environmental Policy Act, guided by the Council on Environmental Quality (1978) implementing regulations. In the National Park Service, this accomplished by (1) disclosing how each alternative meets the criteria set forth in section 101(b), as listed in table 3, and (2) presenting any inconsistencies between the alternatives analyzed and other environmental laws and policies, as described in section 2.7.E of Director's Order 12 (NPS 2001).

When evaluated using the section 101 criteria (see table 3), the preferred alternative would cause the least damage to the biological and physical environment and would best protect, preserve, and enhance historic, cultural, and natural resources.

All three alternatives would protect resources for future generations by preserving and interpreting the fundamental resources of the monuments. Furthermore, the alternatives would provide opportunities to view and appreciate the monuments' unique resources in culturally pleasing surroundings. All three also would strive to mitigate resource impacts from visitor use and surrounding land uses to the greatest extent possible. All alternatives meet these criteria to some degree, although the success in meeting these criteria would vary among the alternatives.

The preferred alternative surpasses the other alternatives in realizing the full range of the section 101 environmental policy goals. Alternative B would provide the highest levels of resource protection while increasing the diversity of visitor opportunities, including the opportunity for self-exploration of the site's resources. Alternative B would provide increased levels of connections and partnerships

with surrounding public lands, making a more seamless connection between the monuments' resources and regional resources.

The no-action alternative provides fewer opportunities to experience the monuments' resources than does the preferred alternative. The preferred alternative would increase appropriate opportunities to explore and learn about the monuments' unique resources, increasing the knowledge and benefit to the public. Thus, the no-action alternative does not meet as well the following national environmental policy goals:

- Attain the widest range of beneficial uses of the environment without degradation.
- Preserve important natural aspects and maintain an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use.

Alternative C provides additional visitor use opportunities and access to Montezuma Castle and Tuzigoot national monuments as well as increased levels of connections and partnerships with surrounding public lands, making a more seamless connection between the monuments' resources and regional resources. However, there would be a higher potential for impacts on archeological resources because this alternative would provide more opportunities for unsupervised access to currently closed areas of the monuments. It also presents greater threats to public health and safety than the preferred alternative. Access to the area above Montezuma Castle could expose visitors to dangers from falling. In addition, access to a large area of Beaver Creek in Montezuma Castle could lead to visitors unfamiliar with desert environments to get lost and/or experience heat exhaus-

tion. Thus, alternative C does not meet the following policy goals as well as the preferred alternative:

- Attain the widest range of beneficial uses without resource degradation and risk to health or safety.
- Preserve important cultural aspects.

TABLE 3: ENVIRONMENTALLY PREFERRED ALTERNATIVE ANALYSIS

Criterion	Alternatives		
	A	B	C
Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.	2 ^{a/}	2	2
Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.	2	2	2
Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.	1	2	1
Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choices.	1	2	1
Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.	1	2	2
Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.	2	2	2
Total points	9	12	10

a/ A rating of 1 indicates that the alternative somewhat meets the criteria. A rating of 2 indicates that the alternative fully meets the intent of the criteria. There were no "low" ratings because elements that were not environmentally sound were eliminated from consideration.

ALTERNATIVES AND ACTIONS CONSIDERED BUT DISMISSED FROM DETAILED EVALUATION

MONTEZUMA CASTLE

Castle Site

Additional hiking trails were considered in the Castle site in areas that ultimately were zoned in resource and research. These hiking trails were dismissed from further consideration because these areas are undesirable for hiking (hot and dry) and because of concerns regarding protection of resources, particularly archeological sites.

Well Site

Constructing a full visitor center at or near the current contact station at the existing parking lot was considered. This was dismissed because of the presence of sensitive resources (grave sites) in this area. Alternative C considers constructing the visitor center at a different location.

Also considered was construction of a paved trail that would comply with Americans with Disabilities Act requirements and would provide access for people with impaired mobility to the area along the ditch that flows from Montezuma Well to the west. This was dismissed because of the impacts on the cultural and natural resources that would be required to construct this type of trail.

TUZIGOOT

Construction of an amphitheater was considered in the creosote flat west of the administrative area. This was dismissed because the locations that would be suitable for this type of facility were far removed from the main visitor attractions (the pueblo and the visitor center). Also, through partnering with Arizona State Parks, this type of facility already is available at Dead Horse Ranch State Park.

SUMMARIES

NPS guidance in *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001) requires that environmental assessments include several summaries that will facilitate reader understanding. The important features of each alternative are summarized in table 4. Detailed descriptions of the features of each alternative were provided earlier in this section.

The guidance in *Director's Order #12 and Handbook* also requires a summary presenting the degree to which each alternative meets the stated purpose, need, and objectives. This information is provided in table 5.

Another summary should present “the impacts of each alternative, including a determination of potential improvement to park resources.” Table 6 provides a brief summary of the effects of each of the alternatives on the impact topics retained for analysis. More detailed information supporting table 6 on the effects of the alternatives is provided in Chapter 4: Environmental Consequences.

A summary of how each alternative would achieve the requirements of section 101(b) of the National Environmental Policy Act was included in the text and table 3 under the heading “Environmentally Preferred Alternative.”

TABLE 4: SUMMARY OF THE ALTERNATIVES

	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Concept	This alternative would continue current management direction and trends at Montezuma Castle and Tuzigoot national monuments. It provides a baseline for comparison in evaluating the changes and impacts of the action alternatives.	The main emphasis of this alternative is to connect the three sites with improved regional orientation to the Verde Valley area. Visitors would be introduced to all three sites and their related interpretive themes through coordinated messaging among the three sites. Visitors would travel to the sites to learn firsthand about elements of the prehistoric and historic stories associated with human settlement of the Verde Valley.	The main emphasis of this alternative is to provide increased opportunities for visitors to self-discover the beauty and wonder of the natural and cultural resources of the monuments. Resources would still receive the highest level of protection, and visitors could interact with and explore a wider range of the resources found in the monuments.
Conditions common to all three sites	<p>Natural resources would be protected by being in the monuments. However, management of these resources would be limited by the lack of staff and funding. Existing operations and visitor facilities would remain in place.</p> <p>Most of the areas accessible to visitors would continue to have hardened facilities with physical and regulatory barriers to manage visitor use.</p> <p>Opportunities for close contact between visitors and the natural and cultural resources at the sites would continue to be limited.</p> <p>The interpretive emphasis would continue to focus on the three primary sites within the monuments, with little connection among the sites in terms of interpretation.</p> <p>Visitor stays at each site would remain short, and visitors would probably not visit more than one site.</p>	<p>The National Park Service would increase resource stabilization and monitoring efforts. Partnerships would improve orientation at the sites and other opportunities in the Verde Valley.</p> <p>More of the monuments' cultural and natural resources would be available for visitors to explore via trails.</p> <p>Visitor stays would increase slightly at each site.</p> <p>The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary.</p>	<p>Greater emphasis would be placed on visitor and administrative services and facilities compared to alternative B because of a larger development footprint in this alternative.</p> <p>More of the monuments' cultural and natural resources would be available for visitors to explore via trails.</p> <p>Visitor stays would increase at each of the three sites.</p> <p>The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary.</p>

TABLE 4: SUMMARY OF THE ALTERNATIVES (CONTINUED)

	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Montezuma Castle	<p>Resource activities would continue to focus on stabilizing the primary site, with intensive preservation treatment and regular cyclic maintenance. Other archeological resources would be stabilized or allowed to molder pursuant to section 106 consultation.</p> <p>To protect cultural sites and landscapes, Beaver Creek would continue to be managed in some areas to control erosion and deposition. Visitor access to the creek would remain limited.</p> <p>Visitor opportunities would continue to focus on viewing the Castle and visiting the visitor center. A picnic area would continue to be available next to the visitor center. Visitor stays would continue to be short (30 minutes to one hour).</p> <p>Existing administration facilities would remain the same.</p>	<p>Most of the monument would be zoned Resources and Research. The existing facilities for visitor services would be zoned Interpretive Historic and would remain much as today.</p> <p>Additional parking may be added at the junction of the monument entrance road and the service road to the sewage lagoons.</p> <p>Some natural-surface trails with interpretive signs may be sited across the river to provide views to the Castle.</p> <p>A corridor along Montezuma Castle Road and Beaver Creek Estates Road would accommodate regional trail activities for horseback riding, hiking, and mountain biking.</p> <p>The equipment shed (determined eligible for listing in the National Register of Historic Places on July 13, 1994) would be rehabilitated and adaptively reused.</p> <p>A new workspace and storage building would be built near the equipment shed to support the maintenance functions of all three sites. The equipment shed would also be rehabilitated and adaptively reused.</p>	<p>Most of the monument would be zoned Resources and Research. The existing visitor facilities would be zoned Interpretive Historic and would remain much as today.</p> <p>Additional parking may be added at the junction of the monument entrance road and the service road to the sewage lagoons.</p> <p>A new headquarters would be located at the beginning of the entrance road to the monument, replacing the current headquarters after its lease expires.</p> <p>Access over the creek and some picnic facilities on the south bank of the creek would be provided. A new bridge would be resistant to flood waters. In addition, self-guided, designated trails would be provided along the river corridor.</p> <p>To provide better views of the river valley, a small number of private vehicles would be allowed access to the plateau above the cliff dwelling.</p> <p>A corridor along Montezuma Castle Road and Beaver Creek Estates Road would accommodate regional trail activities for horseback riding, hiking, and mountain biking.</p> <p>If the increased diversity and amount of activities proposed in this alternative increases the visitation levels and lengths of stay, the amount of area zoned Park Operations may be increased to meet visitor management needs.</p> <p>A modest workspace and storage building would be built near the equipment</p>

TABLE 4: SUMMARY OF THE ALTERNATIVES (CONTINUED)

	Alternative A – No-Action	Alternative B – Preferred	Alternative C
			shed to support the maintenance functions of all three sites. The equipment shed would also be rehabilitated and adaptively reused.
Montezuma Well	<p>Resource activities would continue to focus on monitoring water quality and providing short-term visitor experiences at Montezuma Well, with emphasis on the picnic area. Other archeological resources would be stabilized or allowed to molder pursuant to section 106 consultation.</p> <p>Visitor opportunities would continue to focus on viewing Montezuma Well and visiting the well outlet. The picnic area would continue to be a major draw for local visitation. Visitor stays would be relatively short unless visitors use the picnic area.</p> <p>Existing administration facilities would remain the same.</p>	<p>Most of the monument would be zoned resources and research. The existing facilities leading to and around Montezuma Well would be zoned interpretive historic and remain much as today.</p> <p>The amount of interpretation and interaction with resources associated with the long history of prehistoric and historic farming in the area would increase.</p> <p>The area just south and west of the picnic area would include natural-surface trails improved along existing formal and informal routes.</p> <p>An addition to the visitor contact station (shade ramada) is proposed in the existing footprint of the parking lot near Montezuma Well.</p>	<p>Most of the monument would be zoned Resources and Research. The existing visitor facilities would be zoned Interpretive Historic and remain much as today.</p> <p>A new visitor center is proposed at the entrance of the road to Montezuma Well to increase visitor orientation and interpretation services on site.</p> <p>Designated natural-surface trails would be developed to and along the riparian area of Wet Beaver Creek. In addition, a natural-surface, designated trail would be located near the prehistoric ditch that extends from Montezuma Well and along Beaver Creek. This trail would also follow the rim along the north side of Montezuma Well. A trail would also extend from the visitor center to the well, following the road.</p>
Tuzigoot	<p>Resource activities would continue to focus on stabilizing the primary site, with intensive preservation treatment and regular cyclic maintenance. Other archeological resources would be stabilized or allowed to molder pursuant to section 106 consultation.</p> <p>Visitor opportunities would continue to focus on exploring the pueblo and visiting the visitor center/museum. Visitor stays would continue to be short (less than an hour).</p> <p>Existing administration facilities would remain the same.</p>	<p>Most of the monument would be zoned Interaction and Discovery. The areas east, north, and south of the pueblo would be zoned Interaction and Discovery, providing natural-surface trails along the riparian area. Through collaboration with partners, these trails may link with trails in Dead Horse Ranch State Park and Coconino National Forest.</p> <p>The area between the tailings and Peck's Lake would be zoned Resources and Research.</p> <p>The existing visitor facilities would be zoned Interpretive Historic and would remain much as today.</p> <p>There would be increased cultural demonstrations in and around the pueblo. In addition,</p>	<p>Most of the monument would be zoned Interaction and Discovery. In these areas, natural-surface trails may be designated. If assessment determines that there would be no conflict with preservation of significant cultural resources, mountain bicycling opportunities may also be provided on old road beds in the area.</p> <p>Trail connections via partnerships with neighboring federal and state lands would be explored.</p> <p>The existing visitor facilities would be zoned Interpretive Historic and would remain much as today. The pit house along the entrance road would be zoned</p>

TABLE 4: SUMMARY OF THE ALTERNATIVES (CONTINUED)

	Alternative A – No-Action	Alternative B – Preferred	Alternative C
		<p>access would be provided via trails to the river. Active marsh restoration and management activities would begin at the newly acquired Tavaschi Marsh. If assessment determines that there would be no conflict with preservation of significant cultural resources, a boardwalk would be constructed across the marsh along an existing old road alignment.</p> <p>The monuments will cooperate with the Arizona State Parks on the Verde River Greenway Management Plan proposal for a small parking area and launch for small boats on state-owned land on the east side of the monument entrance road.</p> <p>An additional workspace and storage facility would be constructed near the existing maintenance area to provide onsite administrative space for the functions and operations of Tuzigoot, replacing the offsite workspace and storage lost with the expiration of the General Services Administration lease with the Yavapai Apache reservation.</p>	<p>Resources and Research with a small visitor access trail and interpretive signs adjacent. If assessment determines that there would be no conflict with preservation of significant cultural resources, a boardwalk would be constructed across the Tavaschi Marsh along an existing old road alignment.</p> <p>Most of the area directly around the road, parking lot, pueblo, and administrative facilities would be zoned Resources and Research.</p> <p>The monuments will cooperate with the Arizona State Parks on the Verde River Greenway Management Plan proposal for a small parking area and launch for small boats on state-owned land on the east side of the monument entrance road.</p>

TABLE 5: HOW THE ALTERNATIVES MEET THE OBJECTIVES

Objective	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Cultural and natural resources			
Implement resource management activities to improve resource conditions and protect the fundamental resources and values of the monuments.	<p>The objective would be met to a large degree.</p> <p>Natural resources would be protected by being in the monuments. However, management of these resources would be limited by the lack of staff and funding.</p> <p>Resource activities would continue to focus on stabilizing the primary sites, with intensive preservation treatment and regular cyclic maintenance. Other archeological resources would be stabilized or allowed to molder pursuant to section 106 consultation.</p>	<p>The objective would be fully met.</p> <p>Resource management activities would be increased through expansion of the monuments' resource stabilization program and active participation in the NPS inventory and monitoring program.</p> <p>The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary.</p> <p>Active marsh restoration and management activities would begin at the newly acquired Tavaschi Marsh.</p> <p>Effective partnerships and collaborative planning efforts would be established and maintained that would facilitate the realization of the monuments' goals.</p>	<p>The objective would be met to a large degree.</p> <p>Resource management activities would be increased, and the National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary.</p>
Provide monument facilities and use them in a manner that minimizes adverse impacts on cultural and natural resources.	<p>The objective would be fully met.</p> <p>There would be no change in the monuments' facilities.</p>	<p>The objective would be fully met.</p> <p>Where possible, new facilities such as trails would be constructed in already disturbed areas. Disturbance to sensitive areas such as archeological sites and habitats for threatened or endangered species would also be avoided or mitigated. Trails and the marsh boardwalk would be constructed along existing old road alignments.</p>	<p>The objective would be met to a large degree.</p> <p>Alternative C would result in a larger development footprint. Where possible, new facilities such as trails would be constructed in already disturbed areas. Disturbance to sensitive areas such as archeological sites and habitats for threatened or endangered species would also be avoided or mitigated. Trails and the marsh boardwalk would be constructed along existing old road alignments.</p>

TABLE 5: HOW THE ALTERNATIVES MEET THE OBJECTIVES (CONTINUED)

Objective	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Visitor use and experience			
Provide improved connections between the three sites including information, orientation, and way finding.	The objective would not be met. The interpretive emphasis would continue to focus on the three primary sites within the monuments, with little connection among the sites in terms of interpretation.	The objective would be fully met. Orientation to the sites and other opportunities in the Verde Valley would be improved through partnerships that focus on coordinated way finding, marketing, increased information dissemination, and pre-trip planning services.	The objective would be fully met. The monuments would be considered as part of the region's public land resources. The National Park Service would emphasize partnerships with surrounding public lands agencies to provide connections to recreational and educational opportunities off site. A new visitor center would be constructed at the entrance of the road to Montezuma Well. Trail connections via partnerships with neighboring federal and state lands would be explored.
Provide interpretive and education opportunities that improve visitor understanding and appreciation of the purpose, significance, and fundamental resources and values of the monuments.	The objective would not be met. Opportunities for close contact between visitors and the natural and cultural resources at the sites would continue to be limited. Visitor opportunities would continue to focus on viewing the Castle and visiting the visitor center. Visitor opportunities would continue to focus on viewing Montezuma Well and visiting the well outlet. Visitor opportunities would continue to focus on exploring the pueblo and visiting the visitor center/museum.	The objective would be fully met. More of the monuments' cultural and natural resources would be available for visitors to explore via trails. Some additional natural-surface trails with interpretive signs would be developed. The amount of interpretation and interaction with resources associated with the long history of prehistoric and historic farming in the area would be increased. Cultural demonstrations in and around the pueblo would be increased. In addition, access would be provided via trails to the river.	The objective would be fully met. The greatest amount of the monuments' cultural and natural resources would be available for visitors to explore via trails, new view points, creek access and crossing. A new headquarters would be located at the beginning of the entrance road to the Castle site. A new visitor center would be constructed at the entrance of the road to Montezuma Well.
Monument operations			
Improve efficiency and effectiveness in all divi-	The objective would not be met. Existing operations and visitor facilities	The objective would be met. Improvements to monument operations would	The objective would be met. Improvements to monument operations would

TABLE 5: HOW THE ALTERNATIVES MEET THE OBJECTIVES (CONTINUED)

Objective	Alternative A – No-Action	Alternative B – Preferred	Alternative C
sions and functions of monument operations.	would remain in place Existing administration facilities would remain the same.	result from increased and improved space for monument operations, and improved capability to manage visitors and resources.	result from increased and improved space for monument operations, and improved capability to manage visitors and resources. A modest workspace and storage building, new headquarters, and new visitor center would be built.
Partnerships			
Establish and maintain partnerships to improve visitor orientation to the sites and other opportunities adjacent to the monuments and elsewhere in the Verde Valley.	The objective would not be met. Partnerships opportunities would continue to be limited and form on an ad hoc basis.	The objective would be met. Partnerships would be developed and enhanced with Verde Valley organizations, land owners, and government agencies. Partnerships would improve orientation at the sites and other opportunities in the Verde Valley. The corridor along Montezuma Castle Road and Beaver Creek Estates Road would accommodate regional trail activities. Through collaboration with partners, trails would link with trails in Dead Horse Ranch State Park and Coconino National Forest.	The objective would be met. Partnerships would be developed and enhanced with Verde Valley organizations, land owners, and government agencies. A corridor along Montezuma Castle Road and Beaver Creek Estates Road would accommodate regional trail activities for horseback riding, hiking, and mountain biking.
Establish and maintain effective partnerships and collaborative planning efforts that facilitate the realization of the monuments' goals.	The objective would not be met. Partnerships opportunities would continue to be limited and form on an ad hoc basis.	The objective would be met. The monuments would cooperate with the Arizona State Parks on the Verde River Greenway Management Plan proposal for a small parking area and launch for small boats.	The objective would be met. The monuments would be considered as part of the region's public land resources. The National Park Service would emphasize partnerships with surrounding public lands agencies to provide connections to recreational and educational opportunities off site. The monuments would cooperate with the Arizona State Parks on the Verde River Greenway Management Plan proposal for a small parking area and small boat launch.

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Archeological resources	Actions would have no adverse effect on archeological resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. The beneficial impacts would constitute a small component of cumulative impacts. There would be no impairment of archeological resources.	Actions would have no adverse effect on archeological resources, and expanded interpretation and education could improve visitor stewardship. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of archeological resources.	Actions would have no adverse effect on archeological resources, and expanded interpretation and education could improve visitor stewardship. Implementation of alternative C would generally have the same cumulative effects on archeological resources as those described for alternative B. There would be no impairment of archeological resources.
Prehistoric and historic structures and buildings	Actions would have no adverse effect on prehistoric and historic structures and buildings. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of prehistoric and historic structures and buildings.	Actions would have no adverse effect on prehistoric and historic structures and buildings. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of prehistoric and historic structures and buildings.	Actions would have no adverse effect on prehistoric and historic structures and buildings. Implementation of alternative C would generally have the same cumulative effects on prehistoric and historic structures and buildings as those described for alternative B. There would be no impairment of prehistoric and historic structures and buildings.
Cultural landscapes	Actions would have no adverse effect on cultural landscape resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of cultural landscapes.	Actions would have no adverse effect on cultural landscape resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of cultural landscapes.	Actions would have no adverse effect on cultural landscape resources. The cumulative effects would be beneficial and the contribution would be small. There would be no impairment of cultural landscapes. There would be no impairment of cultural landscapes.

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Ethnographic resources and traditional cultural properties	Actions would have no adverse effect on traditional cultural properties or on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of ethnographic resources and traditional cultural properties.	Actions would have no adverse effect on traditional cultural properties or on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small. There would be no impairment of ethnographic resources and traditional cultural properties.	Actions would have no adverse effect on traditional cultural properties or on ethnographic resources. Cumulative effects would be beneficial; this alternative's contribution would be small. There would be no impairment of ethnographic resources and traditional cultural properties.
Floodplains	Alternative A would result in negligible, long-term, adverse impacts on floodplains. There would be no cumulative impacts at Montezuma Castle National Monument and negligible, adverse, cumulative impacts to floodplains at Tuzigoot National Monument. There would be no impairment of monument resources or values associated with floodplains.	At both monuments, the short- and long-term impacts of trails on erosion and water flow patterns in the floodplain would be negligible. At Tuzigoot, there would be beneficial cumulative impacts as a result of reduced social trailing. Construction and use of a boardwalk at Tavasci Marsh would have long-term, adverse negligible impacts on water flow and erosion in the marsh. Alternative B would have no cumulative impacts on floodplains at Montezuma Castle National Monument and negligible to minor, adverse, cumulative effect on floodplains at Tuzigoot National Monument. There would be no impairment of monument resources or values associated with floodplains.	Short- and long-term, negligible to minor, adverse impacts from trails on floodplains would occur at Montezuma Castle. Short- and long-term, negligible, adverse impacts would occur at Tuzigoot National Monument. Construction and use of a boardwalk at Tavasci Marsh would have long-term, adverse, negligible impacts on and erosion. There would be no cumulative impacts under alternative C at Montezuma Castle National Monument, and negligible, adverse, cumulative impacts at Tuzigoot National Monument. There would be no impairment of monument resources or values associated with floodplains.
Soils	Alternative A would not involve actions that disturb soils, increase erosion potential, or decrease soil productivity in either national monument; impacts would be negligible, adverse, and long-term. Negligible, long-term, adverse cumulative impacts on the soils would occur at Tuzigoot National Monument by increasing the potential for soil erosion resulting from the proposed greenway trail. There would be no impairment of monument resources or values associated with soil.	Short- and long-term, adverse impacts on soils from trails would be negligible at both monuments. The long-term adverse impacts on soil erosion from the expansion of the visitor contact station at the Castle would be negligible. Soil disturbance from boardwalk construction at Tavasci Marsh would be negligible, short- and long-term, and adverse. Cumulative impacts from alternative B and the proposed greenway trail and other plans would result in negligible, long-term, adverse cumulative impacts in both monuments. There would be no impairment of monument resources or values associated with soil.	The riparian area trail at Montezuma Castle would have long-term, adverse, negligible to minor effects. The new visitor center near the Back cabin would have localized, long-term, adverse, minor impacts. There would be no cumulative impacts on soils at Montezuma Castle. Construction of the Tavasci Marsh boardwalk would result in short- and long-term, negligible, adverse impacts on soils. The cumulative impacts on soils at Tuzigoot would be negligible, long-term, and adverse. There would be no impairment of monument resources or values associated with soil.

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Vegetation	<p>Efforts to manage and control nonnative and exotic plant species continue to have long-term, minor, beneficial impacts on the native vegetation in both monuments. This alternative would result in no cumulative effects on vegetation at Montezuma Castle National Monument and negligible, long-term, adverse, cumulative impacts on vegetation at Tuzigoot National Monument by increasing the potential for trampling resulting from the proposed greenway trail. There would be no impairment of monument resources or values associated with vegetation.</p>	<p>Trail construction and use would have negligible, short- and long-term, adverse impact on vegetation, including abundance and distribution, in both monuments. During facility construction Montezuma Castle National Monument, short- and long-term negligible impacts could occur on the periphery of the expansion area. The short- and long-term adverse impacts on vegetation as a result of constructing the boardwalk at Tuzigoot National Monument would be negligible. The long-term, adverse impacts of an increase in nonnative and exotic vegetation would be negligible to minor. The impacts of alternative B on vegetation in combination with the impacts of the proposed greenway trail, increased visitation to the monuments, and other plans would result in negligible, long-term, adverse cumulative impacts in both monuments. There would be no impairment of monument resources or values associated with vegetation.</p>	<p>The short-and long-term adverse impacts from trail development on native vegetation, including abundance and distribution, at Montezuma Castle would be negligible. The long-term adverse impacts of trail designation on abundance and distribution of native vegetation would be negligible. The long-term adverse impact to the vegetation would be minor to moderate following development of new trails at Montezuma Well.</p> <p>Construction of the new visitor center near the Back cabin at Montezuma Well would have a short-term, negligible, adverse, impact and long-term negligible beneficial impact on the surrounding vegetation because the landscape has already been disturbed and the dominant plant species are nonnative and exotic grasses. Construction of a new headquarters and access and parking on the plateau at Montezuma Castle National Monument would have long-term, negligible to minor, adverse impacts. There would be no contribution to cumulative impacts under alternative C on vegetation at Montezuma Castle National Monument.</p> <p>At Tuzigoot, the short-term adverse impacts of trail development on vegetation at Tuzigoot would be negligible. The long-term adverse impacts of the trail on the understory vegetation would be negligible to minor. The long-term adverse impacts of an increase in nonnative and exotic vegetation along the trails would be negligible to minor. The short-and long-term adverse impacts on vegetation during Tavaszi Marsh boardwalk construction would be negligible. The impacts of alternative C</p>

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
			on soils in combination with the impacts of the proposed greenway trail at Tuzigoot National Monument would result in negligible, long-term, adverse cumulative impacts to vegetation. There would be no impairment of monument resources or values associated with vegetation.
Wetlands	Alternative A would have no new actions contributing to adverse impacts on wetland functions or wetland habitat values, resulting in long-term negligible to minor impacts. Ongoing management actions would continue to allow silt to accumulate in Tavasci Marsh in Tuzigoot National Monument, which would have a long-term, minor to moderate, adverse impact on wetland functions and habitat. Increased visitation or development associated with the Verde River Greenway Management Plan would have local, negligible, adverse, cumulative impacts on wetlands. There would be no impairment of monument resources or values associated with wetlands.	There would be no actions at Montezuma Castle National Monument that would affect wetlands under alternative B. Active marsh restoration activities at Tuzigoot National Monument would have a negligible to minor, long-term, beneficial effect on wetland habitat functions at Tavasci Marsh, although construction of new trails and a boardwalk would have negligible to minor, short- and long-term adverse impacts on the marsh wetlands. The contribution of alternative B toward adverse cumulative impacts on wetlands would be negligible. There would be no impairment of monument resources or values associated with wetlands.	There would be no actions at Montezuma Castle National Monument that would affect wetlands under alternative C. At Tavasci Marsh construction of new trails and a boardwalk would have negligible to minor short- and long-term adverse impacts on the marsh wetlands. The cumulative impacts of alternative C are the same as those described for alternative B. There would be no impairment of monument resources or values associated with wetlands.
Wildlife	There are no new actions proposed under alternative A that would have an adverse impact on wildlife or wildlife habitat in the monuments, resulting in negligible short- and long-term adverse impacts. Informal access to the Verde River at Tuzigoot National Monument would continue, representing a long-term, minor, adverse effect on wildlife. The adverse impacts on wildlife of erosion caused by social trailing would be local and negligible in the long term. There would be no cumulative impacts at Montezuma Castle National Monument. Alternative A would result in short-term, negligible to minor, adverse, cumulative impacts on wildlife and wildlife habitat at Tuzigoot National Monument as a result of trail development along	Trail development would have negligible to minor, short-term, adverse impacts on wildlife and wildlife habitat at Montezuma Castle National Monument and negligible, short-term, adverse impacts on wildlife and wildlife habitat at Tuzigoot National Monument. Use of the trails would result in negligible, short-term, adverse impacts on wildlife and wildlife habitat at both monuments. The short-term adverse impacts on wildlife from construction of the boardwalk at Tavasci Marsh in Tuzigoot National Monument would be negligible to minor. The long-term adverse impacts would be negligible to minor for wildlife species that are especially sensitive to disturbance and negligible for adaptable species. The long-term adverse impacts resulting from disturbance of	The long-term adverse impacts to sensitive wildlife from the longer riparian trail at Montezuma Castle would be minor. The new trail at Montezuma Well would have short-term, negligible to minor adverse impacts on wildlife, primarily as a result of construction effects; the long-term adverse impacts of the trail would be negligible. Cumulative impacts on wildlife at Montezuma Castle would be negligible. The long-term adverse impacts of an extended trail and boardwalk at Tuzigoot on wildlife and their habitat would be short- and long-term, local, and negligible to minor. The impacts of alternative C in combination with the impacts of the proposed greenway trail would result in negligible to

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
	the Verde River. The long-term, adverse, cumulative impacts on wildlife and wildlife habitat would be negligible to minor and result from the potential for ongoing disturbance of wildlife throughout the year by visitors. There would be no impairment of wildlife or wildlife habitat in the monuments.	contaminated sediment in the marsh would be negligible to minor depending on the level of exposure to the contaminated sediment. Cumulative long-term, adverse impacts under alternative B on wildlife or wildlife habitat would be negligible at Montezuma Castle National Monument and negligible to minor at Tuzigoot National Monument. There would be no impairment of wildlife or wildlife habitat in the monuments.	minor, long-term adverse cumulative impacts to wildlife and wildlife habitat. There would be no impairment of wildlife or wildlife habitat in the monuments.
Threatened and endangered species	<p>There would be no effects on southwestern willow flycatcher habitat or individual flycatchers foraging at Montezuma Castle National Monument. Long-term, ongoing management actions at Montezuma Castle could benefit flycatcher habitat, so adverse effects would be unlikely. Change in the Tavaschi Marsh habitat at Tuzigoot National Monument could have a long-term effect on flycatcher habitat, but the presence of substantial suitable habitat in the area would result in a “not likely to adversely affect” determination. Potential cumulative effects would not be substantial or widespread enough to be considered adverse.</p> <p>Changes in Tavaschi Marsh during migration could affect, but would not likely adversely affect, the Yuma clapper rail. There would be no cumulative effects on the Yuma clapper rail. There would be no effects on the habitat or population of the yellow-billed cuckoo in either national monument. There would be no cumulative effects on the yellow-billed cuckoo.</p> <p>There would be no impairment of these threatened and endangered species in the monuments.</p>	<p>Actions taken under alternative B at Montezuma Castle would affect southwestern flycatcher habitat, but the effects would not likely be adverse. Marsh restoration and ongoing ditch maintenance activities at Tuzigoot National Monument would have long-term, negligible to minor benefits on flycatcher foraging habitat. Visitors could potentially affect flycatcher habitat, but the effects would not likely be adverse. Cumulative effects at both monuments would not likely be adverse because of mitigation measures and adaptive management strategies. Development of the boardwalk at Tavaschi Marsh would have a negligible effect on habitat in the marsh, with potential to affect the Yuma clapper rail. However, mitigation measures would offset the effects, so they would not be adverse. In the long term, marsh restoration would provide a negligible to minor benefit on rail habitat. There would be no cumulative effects on clapper rails or their habitat under this alternative at Montezuma Castle, and potential cumulative effects at Tuzigoot would not be adverse.</p> <p>There are no proposed actions under this alternative that would affect the yellow-billed cuckoo habitat at Montezuma Castle National Monument. Trail development and use at Tuzigoot National Monument could have a negligible</p>	<p>Effects on the southwestern willow flycatcher would be similar to those described for alternative B. The potential for effects is slightly greater than alternative B, but impacts would not be adverse.</p> <p>Yuma clapper rail - alternative C would have effects similar to those described for alternative B. The potential for effects is slightly greater than alternative B, but impacts would not be adverse.</p> <p>Yellow-billed cuckoo - alternative C would have effects similar to those described for alternative B.</p> <p>There would be no impairment of these threatened and endangered species in the monuments.</p>

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
		<p>effect on the yellow-billed cuckoo, but the effects are unlikely to be adverse. Cumulative effects associated with increased visitation and interaction with the habitats used by the yellow-billed cuckoo would be negligible at either of the monuments.</p> <p>There would be no impairment of these threatened and endangered species in the monuments.</p>	
Visitor use and experience	<p>Alternative A would result in continuing minor beneficial impacts resulting from the continued opportunities to view the monuments' prime cultural resources. However, minor adverse impacts from crowding and congestion at peak times in the parking lot, main loop trail and visitor center at Montezuma Castle would continue during peak times and may get worse with increasing visitation. In addition, the lack of adequate interpretive and education facilities for regular and diverse programming will continue to be a minor adverse impact to visitors. Cumulative effects for aspects of visitor experience could be either beneficial or adverse and range from negligible to major.</p>	<p>Moderate to major, beneficial effects would result from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources. Connecting the three sites in the monuments via a central orientation facility in the Verde Valley would increase exposure of visitors to all three sites and provide a better understanding of each site's unique role in settlement of the Verde Valley. Providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting, and inviting for repeat visitation. Cumulative effects on visitor use and experience would be beneficial and moderate to major. Alternative B would contribute to moderate to major cumulative benefits.</p>	<p>Increased beneficial impacts would result from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources. Connecting the three sites in the monuments via a central visitor center and orientation facility in the Verde Valley would increase exposure of visitors to all three sites and provide a better understanding of each site's unique role in settlement of the Verde Valley. Scenic quality at the Well would be improved by removing the visitor contact station. Further, providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting and inviting for repeat visitation. Alternative C would contribute substantially to moderate to major cumulative benefits at the monuments.</p>
Socioeconomics	<p>The effects of the no-action alternative on socioeconomic conditions in the Verde Valley would be long-term, beneficial, and negligible. Cumulative effects would be long-term, minor, and beneficial, except that land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.</p>	<p>The effects of alternative B on socioeconomic conditions in the Verde Valley would be short-term, beneficial, and minor. Cumulative effects would be short and long-term, minor, and beneficial, except that land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.</p>	<p>Socioeconomics effects in the region would be negligible to minor, short- and long-term, and beneficial. Most cumulative impacts would be short- and long-term, minor, and beneficial. Cumulative land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.</p>

TABLE 6: SUMMARY OF IMPACTS OF THE ALTERNATIVES (CONTINUED)

Impact Topic	Alternative A – No-Action	Alternative B – Preferred	Alternative C
Monument operations	Alternative A would result in long-term, minor, adverse effects on monument operations. The congestion and crowding in the Montezuma Castle National Monument; very limited opportunities at Montezuma Well for site orientation and interpretation; facilities which limit the monument's ability to provide consistent and diverse interpretive programming; and the distribution of staff between three sites, including headquarters and maintenance, which are outside of the monuments. Cumulative effects would be long-term, minor, and adverse.	Implementation of alternative B would result in long-term, minor to moderate, beneficial effects on monument operations because of increased and improved space for monument operations, and improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due the addition of facilities that would require increased operations and maintenance. Alternative B would contribute long-term, minor beneficial effects on monument operations, resulting in cumulative negligible to minor benefits for monument operations.	Alternative C would result in long-term, moderate to major, beneficial effects on Montezuma Castle National Monument operations because of increased and improved space for monument operations, and improved capability to manage visitors and resources. There would be negligible beneficial impacts to Tuzigoot National Monument operations. There would be long-term, minor, adverse impacts because of the addition of facilities that would require increased operations and maintenance. Alternative C would contribute long-term, minor beneficial effects on monument operations, resulting in cumulative negligible to minor benefits for monument operations.

CHAPTER 3: AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the existing environment of Montezuma Castle National Monument and Tuzigoot National Monument and the surrounding region. It focuses on the monument resources, uses, facilities, and socioeconomic characteristics that may be affected if any of the alternatives are implemented. Some features, such as floodplains and endangered species, are discussed because they provide context or must be considered in an environmental assessment.

There are many sources of information on the natural, cultural, and human environment of Montezuma Castle and Tuzigoot national monuments. These include the Montezuma Castle National Monument and Tuzigoot National Monument home page at <http://www.nps.gov/TUZI> and bibliography located on the Internet at <http://www1.nature.nps.gov/nrbib/index.htm>.

CULTURAL RESOURCES

The National Historic Preservation Act of 1966, as amended, requires that federal agencies consider the effects to cultural resources when proceeding with any undertaking. The agency must demonstrate an effort to eliminate, minimize, and/or mitigate any adverse effects to historic or prehistoric properties. The National Historic Preservation Act recognizes five property types: districts, sites, buildings, structures, and objects. As called for in the act, these categories are used in the National Register of Historic Places, the preeminent reference for properties worthy of preservation in the United States. To focus attention on management requirements within these property types, *Management Policies 2006* categorizes cultural resources as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources (traditional cultural properties). (As discussed in chapter 1, museum objects have been dismissed as an impact topic for this general management plan).

Director's Order 28: Cultural Resource Management Guideline (NPS 1998) provides definitions for archeological resources, cultural landscapes, structures, and ethnographic resources (traditional cultural properties):

Archeological resources are the 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 and have the potential to describe and explain human behavior. Archeological features are typically buried but may extend above ground or lie submerged under water; they are commonly associated with prehistoric peoples – resources that predate the beginning of written records – but may be products of more contemporary socie-

ty – resources that postdate Euro-Americans.

Cultural landscapes are settings people have created in the natural world and reveal fundamental ties between people and the land. Landscapes – geographic areas that exhibit evidence of human habitation and intertwined patterns of things both natural and constructed – constitute special places that are expressions of human manipulation and adaptation of the land. There are four general types of cultural landscapes (not mutually exclusive): historic site, historic designed landscape, historic vernacular, and ethnographic.

Structures are constructed works, usually immovable by nature or design, consciously created to serve some human activity. They are material assemblies that extend the limits of human capability and constitute elaborations of human productive ability and artistic sensitivity. Structures – prehistoric and historic – include buildings, roads, vessels, fences, and other assemblies of historical, aesthetic, or scientific importance.

Ethnographic resources are expressions of human culture and the basis of continuity of cultural systems. A cultural system encompasses both the tangible and intangible and includes traditional arts and native languages, religious beliefs, and subsistence activities. Ethnographic resources can include sites, structures, objects, landscapes, or natural features that are assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a traditionally associated group. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.

OVERVIEW OF VERDE VALLEY CULTURAL HISTORY

Introduction

This overview provides a brief history of the Verde Valley and its inhabitants. An understanding of this history serves to set the framework for a more in-depth understanding of the National Park Service's mission to preserve, protect, and interpret the structures, objects, and other remnants of prehistoric cultures at Montezuma Castle and Tuzigoot national monuments.

Prehistoric Period

The Verde Valley is one of the most fertile river valleys in Arizona. Located between two of the major prehistoric population centers, the area was a natural contact zone between various prehistoric peoples and is rich with evidence of the prehistory of Arizona. The cultural resources of the Verde Valley are reflected in the adaptive strategies used by a variety of cultural groups that have successfully inhabited this lush environment for more than 12,000 years.

Paleoindian Period (ca. 9000 to 5500 BC). The Paleoindian Period, although poorly documented throughout the Verde River Valley and adjacent areas, represents the first documented evidence of early man in the Verde Valley. Populations during this period often used big-game-hunting to exploit now-extinct fauna in a grasslands environment over a wide area of present-day North and South America during the late Pleistocene Era. These people were nomadic, traveling in seasonal rounds, hunting large game such as mammoth, horse, bison, and camel, and gathering wild foods such as grasses and seeds.

Archaic Period (ca. 5500 BC to AD 200). Scattered evidence indicates that by approximately 5500 BC, the Verde Valley was inhabited by hunter-gatherers who differed from the preceding Paleoindian

groups by their use of ground stone tools and different styles of projectile points. While hunting and gathering continued as a way of life for some time into the Ceramic Period's Squaw Peak Phase, a shift to agriculture and settled village life was underway. Late in this period, intrusive ceramics appear, indicating contact with the Kayenta Anasazi to the north and the Hohokam (Pima for "those who have gone") to the south. At the time of this contact, or soon thereafter, the first definite signs of agriculture appeared.

Ceramic Period: Squaw Peak Phase (ca. AD 200 to 700). The Verde Valley is part of what has been defined as the northern Hohokam periphery, which portrays the Hohokam regional system as consisting of a core area centered on the Salt River – Gila Basin along with a series of peripheral areas in the mountainous uplands and secondary river valleys that surround the basin. The core area is the origin of the Hohokam tradition and the center of its development, while the peripheries represent either territorial expansion or the effect of contact with the Hohokam on indigenous populations (Breternitz 1960, Fish and Fish 1977).

Ceramic Period: Hackberry Phase (ca. AD 700 to 800) and Cloverleaf Phase (ca. AD 800 to 900). By AD 700 to 900, generally including the Hackberry and Cloverleaf phases, a Hohokam influence expanding out of the Phoenix Basin into the Verde Valley and adjacent areas became obvious. Both small and large archaeological sites dating to this period have been identified in the Middle Verde Valley, with upland villages tending to be small and compact, while villages along the river were larger and more open.

Ceramic Period: Camp Verde Phase (ca. AD 900 to 1125). The Camp Verde Phase represents the last and best known of the Hohokam phases in the Verde Valley. Settlement patterns and site layout corresponded to the previous phase in the Middle Verde with the addition of public ar-

chitecture consisting of adobe-capped mounds, ball courts, and possibly communal structures. Mounds and ball courts appear to both be associated with larger sites, and communal structures, defined on the basis of their large size, appear at sites of any size.

Ceramic Period: Honanki Phase (ca. AD 1125 to 1300) – Tuzigoot Phase (ca. AD 1300 to 1400/1450). Because the traits that characterize the Honanki and Tuzigoot phases are closely related, with the Tuzigoot Phase representing the culmination of the Honanki, the two phases are often considered together as the Honanki-Tuzigoot Phase. These phases span the transition from floodplain pit house villages to pueblos and cliff dwellings in the Verde Valley (Wells and Anderson 1988).

Honanki Phase (ca. AD 1125 to 1300). Some time around AD 1100 to 1125, changes occurred in the Verde Valley that resulted in archeological sites and assemblages that varied from earlier times. It has been postulated that the changes resulted from a migration of Sinagua (Spanish for “without water”) groups. The Honanki Phase witnessed population increases and consolidation with sites clustering to form communities in the Verde Valley, particularly around good farmlands and water sources.

Tuzigoot Phase (ca. AD 1300 to 1400/1450). The consolidation of population into fewer but larger sites culminated in the Tuzigoot Phase, the last currently recognized expression of the Southern Sinagua. The dispersed population of the Verde Valley that occupied smaller pueblos during the Honanki Phase consolidated into about 50 major pueblos – some surrounded by smaller satellite pueblos of up to six rooms, extensive farming areas, and field houses – to define substantial communities. Well-known sites such as Tuzigoot, Montezuma Castle, Montezuma Well, Sacred Mountain, and the Clear Creek Ruin are characteristic of this pe-

riod, although some of these sites may date from as early as ca. AD 1200.

Some time around AD 1425, the Verde Valley appears to have been abandoned by the Sinagua – a trend seen in many other cultural centers in the Southwest. Causes that have been suggested for this abandonment include drought, water-logging of the soil, disease, warfare, invasion, and dissolution of trade networks.

Historic Period (about AD 1500 to Present)

Yavapai and Apache. Shortly after abandonment of the Verde Valley by the Sinagua, groups of foragers and hunters reappeared. By AD 1250, the Yavapai occupied the valley, and the Tonto Apache inhabited the mountains to the east. Thus, the Verde Valley lies within the known territory of the Tonto Apache and Northeastern Yavapai Indians. Although the Yavapai are an upland Yuman group and the Apache are a southern Athabascan-speaking group, both trace their origins to the Montezuma Well area in present-day Montezuma Castle National Monument. The Yavapai are considered the principal group inhabiting the region, with secondary occupation by displaced Apache prior to the 1860s (Basso 1996; Gifford 1936; Goodwin 1942; Schroeder 1960).

Euroamericans. The Spanish began exploring the present-day southwestern United States during the 1530s and entered Arizona during the 1540s. In 1583, a Spanish expedition led by Antonio de Espejo traversed the Middle Verde Valley with Hopi guides en route to the copper mines near present-day Jerome. While in that vicinity, the Spanish explorers found a group of Yavapai mining and trading green and blue pigments. In 1598, another Spanish mining expedition, led by Marcos Farfan de los Godos, visited the mines near Jerome with Hopi guides, and in 1604 Don Juan de Onate crossed the Verde River en route to the Colorado River. Although these Euroamerican parties spent little time in the valley, expedition mem-

bers wrote descriptions of the area's inhabitants as well as their cultural and economic systems.

The first significant Euroamerican intrusion into central Arizona occurred in 1826, when Ewing Young (of the James Ohio Pattie party) traveled up the Verde River. Three years later, Young returned with 40 men to trap furs along the Salt and Verde rivers. The Verde Valley was visited by a succession of Euroamerican explorers, trappers, mountain men, government-sponsored railroad surveyors, and prospectors until the 1860s. Although local Native American tribes were encountered by the early Euroamericans, they were left relatively undisturbed. However, this occasional contact marked the beginning of the decline of the traditional way of life of the Yavapai and Apache.

Euroamerican pioneers did not begin to settle in the Verde Valley until the early 1860s. Passage of the Homestead Act in 1862, discovery of gold, silver, and copper along Big Bug Creek and near Prescott in 1863, and subsequent establishment of the new Arizona territorial capital at Prescott led to Euroamerican settlement in the fertile Verde Valley to provide foodstuffs and supplies for the mines as well as Prescott and Fort Whipple, an army post near the territorial capital.

Yavapai-Apache/Euroamerican Conflict. The influx of Euroamerican settlers led to increasing conflicts with the Yavapai and Apache. These conflicts culminated in the forced march of nearly 180 miles to the San Carlos Reservation (east of present-day Globe, Arizona) over rough terrain and through difficult winter conditions – a bitter trek that resulted in the death of nearly 100 Native Americans. By 1878, more than 5,000 Native Americans, including Western Apache, and Yavapai, had been relocated to the San Carlos Reservation.

Although they took up farming and ranching to support themselves at the San Carlos Reservation, many Yavapai and

Apache longed for their homelands, and after petitioning government officials for permission to leave San Carlos, numerous families returned to the Verde Valley during the late 1890s and early 1900s. Those who returned to the valley found that the region had been greatly altered during their absence as Euroamerican homesteaders had claimed some of the best lands in the valley. Thus, the returning Yavapai and Apache were forced to make their new homes in desolate camps. During the early 20th century, the Bureau of Indian Affairs (BIA) became concerned about the condition of the Yavapai and Apache living in the Verde Valley and attempted to improve their situation.

Middle Verde Valley – Late 19th Century to the Present. With the cessation of hostilities, Euroamerican mining and farming operations prospered in the Verde Valley. By 1890, the civilian population of the Verde Valley exceeded 700, and by the turn of the 20th century, mining activity and cattle raising in the valley had expanded rapidly. The Verde Valley towns that best survived the economic changes of the post-World War II years were those that became prime ranching and farming centers, and by 1960 some 10,000 acres of valley lands were irrigated. Although ranching and farming operations and some small-scale mining activities made up the principal economic activities in the valley through the 1960s, the recreation and tourism industries would soon become the region's dominant economic base.

CULTURAL RESOURCES IN THE NATIONAL MONUMENTS

Archeological Resources

The National Park Service's Western Archeological and Conservation Center (WACC) in Tucson, Arizona, has prepared an updated comprehensive archeological overview and assessment for Montezuma Castle and Tuzigoot national monuments (Powers et al. 2008).

Montezuma Castle National Monument

National Park Service archeologists associated with the Western Archeological and Conservation Center conducted an archeological inventory survey of Montezuma Castle National Monument during April and May 1988. The survey, which covered 100% of the land within the national monument's boundaries, provided the opportunity to systematically record the monument's archeological sites in detailed fashion, determine site boundaries, record new sites, and resolve problems with old site records. Of the 70 sites recorded in 1988, 30 were new site inventory additions. Only three sites and two secondary site loci previously recorded were not relocated, and three of the 70 sites recorded were outside the Castle site but within sight of the NPS boundary fence. In addition, the survey recorded 30 isolated finds (Wells and Anderson 1988).

The archeological sites within the monument are considered to be the best-documented cluster in the Middle Verde Valley and are thus significant to an understanding of the valley's prehistoric development. Monument resources are available to interpret the growth of pit house villages, the transformation to masonry pueblos, development and expansion of pueblo community and irrigation systems, broad interregional trading networks, and abandonment of the valley by prehistoric peoples. Montezuma Castle was part of an estimated 100-room community that constituted an important component of the system of villages and population centers in the Verde Valley during the Honanki and Tuzigoot phases.

The cliff faces with caves and overhangs in the soft limestone constituted another attraction to early inhabitants of the lands in both sites of the national monument. Rockshelters provided efficient sites for occupation. It has been asserted that defense was one of the reasons cliff dwellings and pueblos were constructed on high ridges during the Tuzigoot Phase.

This explanation does not seem to apply to shelter sites along the irrigation canal and along the creek at the Montezuma Well site. The rockshelter sites with masonry walls, which constitute a cross between cliff dwellings and pueblos, are built along cliff faces that do not afford much of a view because of dense riparian vegetation. Even if the brush was cleared, such sites would be more of a trap than a defensible stronghold.

Site Descriptions. The aforementioned archeological study identified 14 site types, 12 of which are considered to contribute to the archeological district's significance for listing in the National Register of Historic Places. The 12 contributing site types at the national monument include cliff dwellings, rockshelters with or without masonry rooms, pueblos, sites with one masonry structure, sites with two masonry structures, artifact scatters, agricultural features, a burial ground, prehistoric cobble concentrations, bedrock mortars, and lithic scatters.

Site Conditions. The condition of the archeological sites at Montezuma Castle National Monument is generally good. Of the 63 prehistoric sites, seven have been disturbed by looting or vandalism, two possibly vandalized, four disturbed by NPS construction, and five have been tested or excavated. Except for the excavated/interpreted pit house, which receives minor to moderate impacts as a result of unintentional vandalism, the prehistoric sites in the monument experience relatively few adverse impacts.

Land-disturbing activities undertaken before establishment of the national monument are not well documented. Archeological sites were, however, impacted by a variety of human activities and natural causes prior to establishment of the national monument, and some of these impacts have continued to the present. These include borrowing building stone from rockshelters, using caves as ranch and settlement-related structures, looting and

vandalism, road and utility line construction, erosion caused by natural forces and human exploration, excavations and removal of deposits by pioneers, explorers, and investigators, surface collection by investigators and looters, historic and continuing use of prehistoric irrigation canals, and graffiti. Sewage lagoon construction by the National Park Service also likely impacted some archeological sites.

Tuzigoot National Monument

National Park Service archeologists associated with the Western Archeological and Conservation Center conducted an archeological inventory survey of Tuzigoot National Monument in March 1986. The survey's project area covered some 512 acres, including 100% of the federally owned land within the boundaries of the national monument as well as most of privately owned lands within its authorized boundaries. The survey provided the opportunity to systematically locate, record, and evaluate all archeologically significant cultural resources within the boundary of the project area (Tagg 1986).

The archeological survey of the monument and adjacent lands recorded eight archeological sites and 21 isolated finds, including two sites and two isolated finds within the federally owned lands of Tuzigoot National Monument.

Site Descriptions. The two archeological sites within the federally owned lands at Tuzigoot National Monument include Tuzigoot Pueblo and a two- to five-room masonry room structure:

TUZI 86A-1. Tuzigoot Pueblo (estimated dates of occupation are ca. AD 1140 to 1400) is the principal prehistoric structure in the national monument and the type site for the Tuzigoot Phase of the Southern Sinagua tradition. Tuzigoot is situated on a crest (known as Tuzigoot Hill) at the east end of a Holocene terrace along the north bank of the Verde River about 120 feet above the floodplain. This terrace, formed by an oxbow diversion of the riv-

er, likely provided arable farmland for the pueblo's prehistoric inhabitants. The hill, sparsely vegetated by plains and desert grassland plants, overlooks the river approximately 110 yards to the south and is surrounded by flat, lower terraces adjacent to the river. Prior to excavation of the site by Caywood and Spicer in 1933 and 1934, the pueblo site had been actively looted. Since the excavation, most of the pueblo has been rebuilt and stabilized. A paved trail encircles the main roomblock, and an old road cut runs below the easternmost roomblock.

The Tuzigoot Pueblo is a medium-sized pueblo with 77 ground-floor rooms and 15 possible second-story rooms in one main roomblock and four smaller contiguous roomblocks. The second-story rooms are in the central portion of the main, and largest, roomblock. The pueblo was constructed of native river boulders (basalt, sandstone, and limestone, as well as irregular blocks of limestone from outcrops on Tuzigoot Hill) and adobe mortar. The main pueblo area, built in terrace-like fashion to conform to the contours of the hill, is approximately 165 yards long and 33 yards wide on a north/south axis. A plaza area lies between the main roomblock and northern block of rooms.

Caywood and Spicer also excavated 411 burials holding the remains of 429 individuals during 1933 and 1934. Nearly all of the excavated burials were reburied in the slope below the prehistoric pueblo close to the original cemetery in 1934. A vast amount of artifacts was recovered during the excavation of the site, including flaked and ground stone, ceramics, bone, shell, and some perishable items such as basketry, textiles, and wood.

TUZI 86A-2. The site is in a flattened area on the east slope of Tuzigoot Hill, about 22 yards below the crest. The site overlooks Tavasci Marsh some 330 yards northeast of the Tuzigoot Pueblo and the flat terrace and floodplain of the Verde River to the east. This site is a 9.9-yard by

3.3-yard concentration of basalt and limestone boulders that represents from two to five masonry rooms.

TUZI 86A-3. This is a moderate scatter of artifacts in a 38.3-yard by 36.1-yard area. The artifacts consist mainly of stone debris and ceramics.

TUZI 86A-4. The site lies on the southern tip of a ridge finger extending off the high mesa bordering the Tavasci Marsh and consists of a structure with two (possibly three) contiguous masonry rooms. The main structure is rectangular with a remaining wall extending from the southeast corner of the structure that may be another room or a ramada. The walls are dry-laid basalt and limestone boulders and blocks that stand three courses high in places. Large boulders and limestone outcrops have been incorporated into the structure. Relatively dense wall fall surrounds the roomblock. The second pile of rock rubble is in a clear area between rock outcrops, and may be another room. A very light scatter of artifacts is in and around the rooms, but trash lies downslope to the south and west. Artifacts include flaked stone debris, ceramics, and four pieces of shell.

TUZI 86A-5. The site lies on the western tip of a ridge finger extending off the high mesa which borders the Tavasci Marsh. The roomblock has several rooms on the flat tip of the ridge, but most of the rooms are off the northwestern slope.

The site is constructed of local limestone and basalt boulders and blocks, and some portions of walls are still three courses high. Substantial wall fall indicates that the wall were higher. Many room corners are visible, and several upright slabs distinguish one room, but individual room size is difficult to determine in the rubble. The roomblock has been built on a slope and appears terraced to conform to the contours. A moderate scatter of flaked stone, ceramics, and one metate fragment were seen among the rooms.

Other Sites. The other six archeological sites recorded during the survey, as well as the nearby sites at Hatalacva and the Tuzigoot Extension Ruin, were cobble masonry surface structures, including one-room field houses, two-to-five-room structures, small pueblos with from 10 to 30 rooms, and large pueblos of approximately 100 rooms. Associated artifact scatters are moderate to heavy.

Isolated Finds. Twenty-one isolated finds were recorded in the archeological survey, two of which were in the federally owned lands of the national monument. All of these sites date to the Tuzigoot Phase or later.

Site Dates, Camp Verde Phase. Artifacts plus the lack of aboveground masonry architecture at one archeological site outside the federally owned lands of the national monument suggest a Camp Verde Phase, or perhaps earlier, occupation. Because of its location high on a mesa away from the bottomlands, the site may be a specialized-use site for hunting and gathering rather than a farmstead site.

Site Dates, Honanki and Tuzigoot Phases. The remainder of the sites recorded during the archeological survey can be placed in the Honanki and Tuzigoot phases. Excavation results from the three pueblos – Tuzigoot, Hatalacva, and Tuzigoot Extension Ruin – indicate early as well as later occupation periods. The early occupation began in the Honanki Phase, with the later, and major, occupation occurring in the Tuzigoot Phase; at Tuzigoot, approximately eight rooms were occupied in the Honanki Phase and approximately 92 in the Tuzigoot Phase. Based on survey results alone, the remaining small sites could not be dated with more certainty other than to place them generally within the two phases, since many of the ceramic types and architectural styles were common to both phases.

The results of the Tuzigoot archeological survey indicate a series of small sites sur-

rounding the Tuzigoot Pueblo that appear to be contemporaneous. Although it is unclear whether these sites were abandoned upon completion of the large pueblo at Tuzigoot or if occupation at these sites continued, excavation at Tuzigoot and the Tuzigoot Extension Ruin both show early and later occupations, thus making it appear likely that many of the smaller sites were occupied simultaneously and were related to the larger pueblos as components of internally diversified communities.

Site Conditions. The condition of the archeological sites at Tuzigoot National Monument, like those at Montezuma Castle, is generally good. However, archeological sites within the current boundaries of the national monument and its adjacent lands, like those at Montezuma Castle, were impacted by a variety of human activities and natural causes prior to establishment of the monument, and some of these impacts have continued to the present. These activities include farming, grazing, mining, camping, hiking, hunting, looting and vandalism, poaching, and off-road driving. Archeological sites have also been impacted by erosion resulting from natural forces and human exploration; excavations and removal of deposits by pioneers, explorers, and investigators; and surface collection by investigators and looters.

Increasing development on lands surrounding the monument continues to result in direct and indirect impacts to archeological sites, and development in the valley has resulted in visual intrusions to the monument's cultural and natural setting. Adverse impacts to these resources are caused by farming, feral animals, woodcutting, highway and road construction, residential development and associated infrastructure, water demands, and pesticide and fertilizer use draining into water resources.

Arizona's growing popularity for permanent and seasonal residence has resulted

in increased visitation to the national monument and a corresponding decrease in the capacity of the limited staff to protect the archeological resources. Thus, human impacts include littering, trespassing (after hours entry and entry into closed areas), looting and vandalism, illegal hunting, and other unauthorized consumptive uses. Social trails and related erosion, caused by visitors leaving established trails, have impacted archeological resources. Stream channel alteration – down cutting or deposition of the channel, flooding, or change of flow regime – resulting from gravel mining, diversion, vegetation changes, or other human manipulation could result in adverse impacts on archeological sites in the Tuzigoot vicinity in future years.

ETHNOGRAPHIC RESOURCES

Comprehensive ethnographic overviews and assessments (including ethnobotanical studies) for Montezuma Castle and Tuzigoot national monuments have not been prepared to date. Thus, no ethnographic resources, sacred sites, or traditional cultural properties (ethnographic resources eligible for listing in the National Register of Historic Places) have been identified in the national monuments. However currently, for compliance purposes, Montezuma Well itself is treated as a traditional cultural property. These studies are necessary to identify traditional uses of national monument lands by affiliated Native American groups and to identify and define cultural and natural features that are significant to the ethnic heritage and cultural affiliation of such groups.

Cultural Affiliation Study

Under the provisions of the Native American Graves and Repatriation Act of 1990 (Public Law 101-601), all federal government agencies and federally funded museums and institutions whose archeological collections include human remains and associated funerary objects are required to

engage in consultation with lineal descendants and culturally affiliated Native American tribes and organizations. In 1994, the National Park Service's Western Archeological and Conservation Center contracted with the Bureau of Applied Research in Anthropology at the University of Arizona to identify cultural affiliation at National Park Service units in Arizona, including Montezuma Castle and Tuzigoot national monuments. Based on archeological, ethnographic, and ethnohistoric research and oral history, the report identified three groups as being potentially affiliated with the two national monuments' inventory of human remains and associated funerary objects: Yavapai, Hopi, and Northern Piman. The report also identified the following Native American tribes as having cultural affiliation with the two national monuments:

- Yavapai-Prescott Indian Tribe, Camp Verde Yavapai-Apache Tribe, and Fort McDowell Mohave-Apache Indian Community, all of which have had a long relational history with the Verde Valley.
- Ethnic Hopi, who currently visit Montezuma Castle and Montezuma Well to conduct rituals; the Castle structure holds supernatural significance for ethnic Hopis.
- Gila River and the Salt River Pima-Maricopa Indian Community, whose community speakers inhabited the Middle Verde River Valley in 1583 and typically view the valley as a commodity exchange route.

Native American Graves Protection and Repatriation Act Inventory Information

Pursuant to the cultural affiliation study, the Western Archeological and Conservation Center prepared preliminary Native American Graves Protection and Repatriation Act inventory information regarding the Montezuma Castle and Tuzigoot national monuments' museum collections.

Montezuma Castle National Monument. The "Preliminary Native American Graves Protection and Repatriation Act Inventory Information" regarding the museum collections at Montezuma Castle attributes the human remains and associated funerary objects in the collections primarily to the Southern Sinagua Honanki-Tuzigoot Phase, although some items could not be dated. According to the affiliation study, the monument inventory includes:

- A minimum of 121 individuals (112 inhumations and nine fragmentary remains) primarily from Montezuma Castle, Castle A, Swallet Cave, Montezuma Well, and other sites in the vicinity of Montezuma Castle. A few remains are from unknown locations.
- Associated funerary objects include shell and stone beads, pendants, and bracelets; ceramic bowls, a miniature jar, and sherds; fiber padding, matting, and textiles; a cradleboard; an atlatl dart and a flake; a bow and arrows; and soil samples.

Tuzigoot National Monument. The preliminary Native American Graves Protection and Repatriation Act inventory information regarding the museum collections at Tuzigoot National Monument attributes the human remains and associated funerary objects in the collections from the Tuzigoot, Tuzigoot Extension Ruin, and Hatalacva pueblos primarily to the Southern Sinagua Honanki-Tuzigoot Phase. An individual recovered from the Clarkdale Smelter site was attributed to the Southern Sinagua Camp Verde Phase, and an individual from Sedona could be Yavapai or Apache. Most of the other human remains are Native American, but their cultural context is not known. According to the affiliation study, the Tuzigoot inventory includes the following:

- Fourteen individuals and seven fragmentary remains from Tuzigoot; one fragmentary remain from the Tuzigoot Extension Ruin; at least two individu-

als from Hatalacva; five individuals from four burials from the area along Sycamore Creek, about six miles north-northwest of Clarkdale; one individual from the area north of Clarkdale; one individual from the Clarkdale Smelter site; four fragmentary remains from several locations along the Verde River; one individual from the Will Steel property near Sedona; one fragmentary remain from Clear Creek; one burial and fragmentary remains from at least 34 individuals recovered from unknown locations.

- Twenty-one associated funerary objects, including bowls, jars, a sherd, arrows, a quid, a sandal, a corn cob, a bracelet, a bead, awls, and soil samples.

PREHISTORIC AND HISTORIC STRUCTURES AND BUILDINGS

Historic resource studies have not been prepared for Montezuma Castle and Tuzigoot national monuments. Such studies are needed to provide a historic overview of both NPS units that would identify and evaluate their cultural resources within historic contexts and include completed/updated requisite National Register of Historic Places nomination forms and historic base maps. However, Josh Protas' *A Past Preserved in Stone: A History of Montezuma Castle National Monument*, an administrative history published by the Western National Parks Association in 2002, provides historic background material relating to the development and administration of Montezuma Castle. Historic structure preservation guides are also needed to guide long-term and cyclic maintenance efforts designed to preserve the prehistoric and historic structures in the monuments.

List of Classified Structures

The list of classified structures is a computerized, evaluated inventory of all prehistoric and historic structures and buildings

having historical, architectural, or engineering significance in which the National Park Service has or plans to acquire any legal interest. Included are structures that individually meet the criteria of the National Register of Historic Places or are contributing resources of sites and districts that meet national register evaluation criteria. Also included are other structures – moved, reconstructed, and commemorative structures as well as structures achieving significance within the last 50 years – that are managed as cultural resources because of management decisions that have been made pursuant to the planning process.

Montezuma Castle National Monument. Although the list of classified structures for Montezuma Castle National Monument requires updating, 16 structures are currently listed. These include the following:

- Castle A – AZ 0:5:95 (NA 6373) (Listed in the National Register of Historic Places on October 15, 1966).
- Residence – MH5 (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Residence – MH4 (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Site NA 1271 (listed in the National Register of Historic Places on October 15, 1966; rockshelter with one masonry room inside Montezuma Well).
- Site NA 1272 A and B (listed in the National Register of Historic Places on October 15, 1966; rockshelter with two groupings of masonry rooms inside Montezuma Well).
- Site NA 1273 (listed in the National Register of Historic Places on October 15, 1966).
- Montezuma Castle – Site NA 1278 (listed in the National Register of Historic Places on October 15, 1966; includes nearby sites and features

MOCA 88A-65/NA 6384 and NA 2223-24).

- Swallet Cave – Site NA 4630 (listed in the National Register of Historic Places on October 15, 1966).
- Site NA 5553 A and B (MOCA 88A-30) (listed in the National Register of Historic Places on October 15, 1966; rockshelter consisting of two to three rooms on two levels).
- Equipment Shed (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Prehistoric Irrigation Canals (listed in the National Register of Historic Places on October 15, 1966).
- Historic Irrigation Ditch (listed in the National Register of Historic Places on October 15, 1966).
- Civilian Conservation Corps Revetment Wall (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Site AZ 0:5:69 (NA 7280), a single masonry room.
- Site AZ 0:5:75 (NA 4619), a series of 19 cavates southwest of Castle A.
- Site AZ 0:5:91 (NA 1274), an 11 room pueblo on the rim of the well.

Stabilization, repair, and preservation projects have been carried out on the national monument's prehistoric structures since the late 19th century, but preservation activities have improved with better techniques as a result of specialized training. Although current staff members have ruins stabilization skills and continue to conduct routine maintenance of these structures, the lack of adequate funding and personnel has barely enabled them to keep up with necessary routine stabilization work, much less long-term, cyclic work that should be performed in a timely manner to prevent further deterioration.

Tuzigoot National Monument. Five structures are currently listed in the List of Classified Structures for Tuzigoot National Monument, a list that should also be updated. These include the following:

- Tuzigoot Pueblo (listed in the National Register of Historic Places on October 15, 1966).
- Museum and Headquarters Building (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Storage Tool House (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Pump House (determined eligible for listing in the National Register of Historic Places on July 13, 1994).
- Retaining Wall (determined eligible for listing in the National Register of Historic Places on July 13, 1994).

Stabilization, repair, and preservation projects have been carried out on the national monument's prehistoric structures since the 1930s, but preservation activities, like those at Montezuma Castle, have improved with better techniques, more highly skilled labor, and specialized training. Although current staff members have ruins stabilization skills and continue to conduct routine maintenance of these structures, the lack of adequate funding and personnel has barely enabled them to keep up with necessary routine stabilization work, much less long-term, cyclic work that should be performed in a timely manner to prevent further deterioration.

CULTURAL LANDSCAPES

According to *Director's Order 28: Cultural Resource Management Guideline*, the National Park Service defines a cultural landscape as a geographic area, including both natural and cultural resources that are associated with a historic event, activity, or person. The National Park Service recognizes four cultural landscape categories: historic designed landscapes, historic ver-

ricular landscapes, historic sites, and ethnographic landscapes. In the broadest sense, a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

No formal cultural landscape inventory work has been conducted at Montezuma Castle and Tuzigoot national monuments. Although current archeological and historic structure inventories and studies include most of the national monuments' identified landscape features, other elements of landscape patterns and systems should be included as cultural landscape resources. Examples include circulation patterns, vegetation patterns (both native and designed), historic vegetation associated with homesteading and the Civilian Conservation Corps era, relationships between development and natural systems, and spatial organization. It is standard NPS practice to treat landscapes that are considered potentially eligible for listing in the National Register of Historic Places as eligible.

Montezuma Castle National Monument

Some known and potential cultural landscape resources have been identified at Montezuma Castle National Monument at Level 0 (Park Reconnaissance Survey) of the cultural landscape inventory process. These include the following:

- Sinaguan occupation remains / Montezuma Castle site cultural landscape resources, including agricultural fields.
- Hohokam occupation remains / Montezuma Well site cultural landscape resources, including irrigation canals.
- New Deal / Civilian Conservation Corps-era historic designed landscape

resources, including rock walls, drainage ditches, and other structural elements, and historic vegetation in the Castle site (NPS development at Montezuma Castle).

- Homesteading/ranching cultural landscape resources, including historic irrigation canals, agricultural fields, historic trees or other vegetation, and potentially the late 19th century smokehouse structure in the Montezuma Well site.

The current cultural landscape inventory database for the monument lists two identified areas ("component landscapes") in need of cultural landscape inventory: Montezuma Castle and Montezuma Well.

Tuzigoot National Monument

Some known and potential cultural landscape resources have been identified at Level 0 of the cultural landscape inventory process at Tuzigoot National Monument. These include the following:

- New Deal / Works Progress Administration historic designed landscape resources, including the Visitor Center / Administrative complex area and historic vegetation.
- Sinaguan/Hohokam occupation remains cultural landscape resources.

The current cultural landscape inventory database for the monument lists one identified area ("component landscape") in need of cultural landscape inventory: Tuzigoot National Monument landscape.

PROPERTIES LISTED IN THE NATIONAL REGISTER OF HISTORIC PLACES

Montezuma Castle National Monument

Montezuma Castle National Monument was listed in the National Register of Historic Places as a district (District also known as Montezuma Castle and Montezuma Well) on October 15, 1966, pursuant to passage of the National Historic Pre-

ervation Act of 1966. An updated National Register of Historic Places Inventory – Nomination Form (prepared by personnel of the National Park Service’s Western Archeological Center) was approved by the Keeper of the National Register on November 20, 1978. On May 2, 1990, Western Archeological and Conservation Center personnel prepared an updated comprehensive draft National Register of Historic Places registration form for the Montezuma Castle National Monument Archeological District that incorporated the findings of the latest archeological research by the Western Archeological and Conservation Center at the national monument (NPS 1990).

According to the 1978 national register nomination form and the updated 1990 draft national register registration form, the district and its 63 contributing archeological sites have, as a group, national significance. (An additional five sites were reviewed and determined not to contribute to the archeological significance of the district.) The district and its contributing sites are nationally significant under the following national register criteria:

- A – property that is associated with events that have made a significant contribution to the broad patterns of American history.
- C – property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D – property that has yielded, or is likely to yield, information important in prehistory or history.

Criterion A. The district, along with its associated sites, is nationally significant because it contains archeological remains dating from the appearance of pre-ceramic settlements in the Southwest until

the protohistoric Apache occupation. The earliest structure known is a Squaw Peak Phase pit house, dating ca. AD 600. Following this in time is a Camp Verde pit house, which represents the first appearance of the Southern Sinagua culture, manifest in small hamlets of Hohokam-like pit houses along the Verde River. The primary archeological resources within the national monument are prehistoric Sinagua sites and features representing the broad pattern of community aggregation and interactive networks occurring throughout the Southwest from ca. AD 900 to 1400.

Preserved within the monument boundaries are 63 sites that include a significant sample of the Honanki-Tuzigoot Phase settlement system of the Middle Verde River. Montezuma Castle is important historically as a visitor attraction, having been first reported by Euroamericans in 1875, although undoubtedly first visited at a much earlier date. It is now one of the most heavily visited prehistoric sites in the United States and ranks with Mesa Verde National Park’s ruins as a symbol of prehistoric cultures in North America.

Montezuma Castle is also significant for its association with the historic preservation movement of the United States. Because it was an early visitor attraction, its preservation became a matter of concern by the late 19th century. First stabilized in 1897 by the Arizona Antiquarian Association, it was established as one of the country’s first national monuments in 1906. Along with Casa Grande, Mesa Verde, and similar nationally known prehistoric ruins, its presence in the American consciousness undoubtedly led to passage of the Antiquities Act of 1906 and the early 20th century movement to preserve the remains of native cultures.

Criterion C. The archeological district and its associated sites are nationally significant in the area of prehistoric architecture, representing a rare survival of Hohokam buildings embodying distinctive cha-

racteristics of a type, period, and method of construction. The district contains several sites representing distinctive characteristics of prehistoric Southwestern cultures.

Although it has been the object of stabilization efforts, the Castle is in an excellent state of preservation. Almost all walls and roofs are original, thus preserving the original boulder/cobble-and-adobe masonry and viga-and-latilla roof construction found in the Verde Valley and elsewhere in the Southwest. Only floor features are missing, obscured by historic asphalt covering. Its excellent condition has permitted detailed architectural analysis, addressing building techniques, construction sequence, and room function.

Criterion D. Excavation and survey at Montezuma Castle National Monument has yielded significant information contributing to knowledge of the late Archaic and Sinagua inhabitants of the Verde Valley. This information, integrated with the survey data from adjacent private lands and Coconino National Forest, constitute a database for research on prehistoric community organization, population change, diet, land use, and interaction with other areas. The Verde River has had very little controlled archeological excavation. All cultural deposits were removed from Montezuma Castle by the turn of the 20th century, and the cliff dwelling has little potential for further study, other than re-examination of its architecture, historic graffiti, and perhaps C14 dates (there are no direct dates of the cliff dwelling).

Past archeological studies of the monument have been important for the development of cultural frameworks for understanding Southwestern prehistory. In addition to providing information on a wide range of archeological problems and concerns, further studies in the monument may provide new information about architectural styles and techniques using the unique architectural remains of the mo-

nument, specifically Montezuma Castle and Castle A, as a source of study. Montezuma Well is a unique geographic feature that may have ethnic significance to the general Native American public as an interpretive exhibit. The value of these non-renewable resources will undoubtedly be enhanced in the future as development on private land in the Verde Valley results in destruction of prehistoric sites.

Tuzigoot National Monument

Tuzigoot National Monument Archeological District was listed in the National Register of Historic Places on October 15, 1966. An updated National Register of Historic Places Inventory – Nomination Form (NPS 1987; prepared by Western Archeological and Conservation Center personnel) was approved by the Keeper of the National Register on October 23, 1987.

According to the 1987 national register nomination form, the archeological district includes two sites associated with Southern Sinagua occupation – Tuzigoot Ruin/Pueblo (AZ N:4:1) and a site consisting of the remnants of a contemporaneous two-to-five-room masonry structure (AZ N:4:19) approximately 330 yards northeast of the Tuzigoot Ruin.

Criterion C. The 1987 national register nomination form states that the archeological district and its associated sites are nationally significant under national register criterion C in the area of prehistoric architecture. The sites associated with the district represent a rare survival of Southern Sinagua structures embodying distinctive characteristics of a type, period, and method of construction.

Criterion D. The archeological district is also significant under criterion D because it has yielded, and is likely to yield, further information important in Southwestern and Verde Valley prehistory. The district is the type site for the Tuzigoot Phase of the Southern Sinagua, and the ceramics, artifacts, and burials excavated in 1933

and 1934 remain the type assemblage of the Tuzigoot Phase. Previous excavation and examination, as well as future study of the district, have yielded, and are likely to yield, further information on prehistoric architecture, material culture, burials, subsistence and plant use, environment, settlement patterns, trade and external relationships, and dating.

PROPERTIES DETERMINED ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES

On July 13, 1994, three structures and buildings at Montezuma Castle National Monument and four structures and buildings at Tuzigoot National Monument were determined eligible for listing in the National Register of Historic Places by the National Park Service, with concurrence by the Arizona state historic preservation officer. These structures included:

- Montezuma Castle: two residences and the equipment shed.
- Tuzigoot: museum and headquarters building, storage tool house, pump house, and retaining wall.

These structures and buildings, built in the adobe and stone Pueblo-style of rustic architecture, were constructed during the 1930s using funds provided by the Works Progress Administration and other New Deal public works agencies. The structures are locally significant under national register criterion C in the fields of architecture and landscape architecture because they constitute quality examples of environmental design and the National Park Service's historically significant rustic architectural concept of constructing

buildings and structures that reflect local styles, materials, and careful site location to lessen their impact on the landscape and ensure that they blend with their natural surroundings.

OTHER STRUCTURES OF POTENTIAL HISTORIC SIGNIFICANCE

Montezuma Castle Visitor Center

The Montezuma Castle Visitor Center, constructed in 1960, was identified as a significant Mission 66 structure in an NPS study, *Mission 66 Visitor Centers: The History of a Building Type*, prepared in 2000. Though a modest, small structure, the visitor center building is important because of its designer, Cecil Doty, and for its architectural design. The structure is a component of the combined walkway, comfort station, and stone walls that together form a strong linear approach that lead national monument visitors to the Castle ruins.

Back Cabin and Smokehouse

In 1888, William B. Back moved with his family onto what would later become known as the Montezuma Well property at Montezuma Castle National Monument. Back irrigated crops by using the prehistoric ditches built by the Sinagua, constructed a number of buildings on the property (his homestead entry was patented on July 18, 1907), and opened Montezuma Well as a tourist attraction in 1910. Two of the buildings, including the family home (now referred to as the Back cabin) and a log smokehouse, remain extant, although the latter is in deteriorated condition (Protas 2002).

NATURAL RESOURCES

Montezuma Castle, Montezuma Well, and Tuzigoot are all in the Verde Valley and the Upper Verde River Watershed. The Verde Valley is in central Arizona in the northeast portion of Yavapai County, about 100 miles north of Phoenix. Elevations in the Verde Valley range from 3,512 feet at Clarkdale, to 3,300 feet at Cottonwood, to 3,133 feet at Camp Verde. The Verde Valley is at the junction of the Colorado Plateau and the Basin and Range physiographic provinces. The surrounding mountains, including Mingus Mountain, Woodchute Mountain, and the nearby Mogollon Rim, rise above the valley to an elevation of 7,500 feet or greater.

The climate pattern is a distinct, bimodal climatic regime known as the Southwestern or Arizona climate pattern. This climate is characterized by summer precipitation from the North America monsoon and fall drought broken by wintertime Pacific frontal precipitation. Precipitation varies from year to year and has ranged from less than four to more than 22 inches per year. Winter precipitation is related to the eastward movement of middle latitude storms that form in the northern Pacific Ocean. These storms can produce major floods in the Verde Valley, particularly when rains fall on snowpack at higher elevations along Mogollon Rim. Summer storms are typically of short duration and locally intense. These storms may produce flash flooding. Although the three sites – Montezuma Castle, Montezuma Well, and Tuzigoot – are separated by up to 20 miles, they share a common watershed.

The surrounding mountains and the Verde River itself contribute to the region's moderate temperatures throughout the year. The down-gradient flow of cool air off the surrounding highlands causes a 30°F to 40°F decrease in nighttime temperatures. Temperatures during the winter months are typically 50°F to 60°F during the day, with evening temperatures falling

to 20°F to 30°F. Summer daytime temperatures often reach 100°F, cooling during the evening to 50°F to 80°F (Arizona Department of Commerce [ADOC] 1989).

FLOODPLAINS

Floodplains are the alluvial lands adjacent to a river or drainage that periodically experience flooding. Floodplains include the floodway, floodway fringe, and those areas expected to encompass the 100- and 500-year floods. According to the Federal Emergency Management Agency (FEMA) definition, the floodway includes the channel of the river plus any additional land areas that must be kept free of encroachment to convey the 100-year floodwaters without substantial increases in flood heights. Encroachment such as artificial fill would reduce the flood-carrying capacity of the river, increase its flood heights, and increase the flood hazards in areas beyond the encroachment itself (Averitt *et al.* 1990). Floodplains are an important consideration in any river corridor planning endeavor and are necessary to accommodate overflow during flooding. Portions of all three monument sites are within the 100-year floodplain as designated by FEMA (Bond pers. comm. 2005). However all existing development in the three sites, including the wastewater lagoon at the Castle, is outside the designated 100-year floodplain.

Beaver Creek, a perennial stream and tributary to the Verde River, flows in front of the cliff dwelling at Montezuma Castle and periodically floods, particularly following winter and monsoon rains. The creek flow has been modified by upstream withdrawals, and there are now periods when the creek is essentially dry except for remnant deep pools (Rowlands 1999). The vegetation in the riparian corridor along the creek, including cottonwoods, velvet mesquite, and willows, requires periodic flooding to stay healthy and regenerate.

rate. Some species such as the southwest willow flycatcher prefer to nest in areas where periodic flooding occurs. Wet Beaver Creek, which flows through Montezuma Well, is also a perennial stream. The flow regime has also been modified by upstream withdrawals, but Wet Beaver Creek does not have a pronounced dry period.

The Verde River, Arizona's only wild and scenic river, flows through Prescott National Forest, Coconino National Forest, and along the boundary of Tuzigoot National Monument. The State of Arizona identified a six-mile stretch that includes the flow past the Tuzigoot boundary as a critical natural resource and designated it as the Verde River Greenway State Natural Area. The cottonwoods and shrubs along the banks support coyotes, raccoons, mule deer, beavers, and nearly 20 threatened or endangered species, including river otter and lowland leopard frogs (Sedona Verde Valley Tourism Council 2007). Additional threatened and endangered species include the spikedace (a native minnow), razorback sucker, Colorado pikeminnow, bald eagle, and southwestern willow flycatcher. Resident and migratory birds abound throughout the river (Forest Service 2002).

WETLANDS

Tavasci Marsh in Tuzigoot National Monument is the largest wetland within the three monument sites. The hydrology of the marsh wetland is sustained by two sources, one is natural and the other is artificial. Several permanent springs along the northeast edge of the marsh, including Shea Spring, are the natural water sources. The marsh also receives water from Peck's Lake which is located up gradient from the Tavasci Marsh. Peck's Lake is filled with natural spring water and water from Verde River. The river water is funneled from the river through Brewers tunnel into Peck's Lake, which contributes most of the lake volume. Peck's Lake discharges water into the marsh through a culvert

that flows under an old road and into an outflow channel called the Tavasci Ditch. The ditch was originally constructed to divert the flow around an agricultural field and the water was occasionally withdrawn from the ditch to irrigate the field. Over time, in the past 60 years, the ditch has been breached in several locations and all of the diverted water flows into what was once the agricultural field but is now the Tavasci Marsh.

The portion of the Tavasci Marsh area that is naturally sustained by spring water measures approximately 20 acres. The area that is artificially sustained by diverted river flow is approximately 40 acres. The entire existing Tavasci Marsh area is approximately 60 acres.

Typically, sedges and grasses cover the upper, drier portion of the marsh, and dense stands of cattails occupy the lower, wetter sections of the marsh. The marsh provides habitat for wildlife species, including rare species. The sediment in the Tavasci Marsh contains high concentrations of heavy metals, and is infested with nonnative vegetation such as Russian olive and tamarisk.

SOILS AND VEGETATION

Montezuma Castle National Monument

Soils are broadly classified into two types: the riverine bottomland soils that are dominated by stream deposits and the upland rocky calcareous soils (Soil Conservation Service [SCS] and USFS 1972). The Retriever soil series is dominant and characterized by limestone outcrops and limestone-derived soils on upland mesas, ridges, and side-slopes. The dominant vegetation community is scrub-shrub, including creosote bush (*Larrea divaricata* ssp. *tridentata*), mariola (*Parthenium incanum*), localized stands of perennial grasses, and often scattered one-seed and Utah juniper (*Juniperus monosperma*, *J. osteosperma*) and crucifixion thorn (*Ceanothus holacantha*) (Rowlands 1999).

The river corridor soils at Montezuma Castle National Monument are primarily alluvial in nature, classed as riverwash and as terrace deposits. The Riverwash soils are primarily stratified sand, silt, and clay, with scattered deposits of gravel, cobbles, stones, and boulders. The terrace deposits border the wide channel of the river and may be 5 to 10 feet high. These deposits consist of a mixture of unconsolidated but finely stratified clay, silt, sand, and gravel. Both the riverwash and terrace deposits are very permeable and form a good aquifer (Lehner 1958).

The primary vegetation is riparian woodland / gallery forest, with by riparian trees such as the Arizona sycamore (*Platanus wrightii*) and Arizona ash (*Fraxinus pennsylvanica* ssp. *velutina*) and understory species such as the Gooding willow (*Salix gooddingii*) as well as grasses and flowering plants (Rowlands 1999). The vegetation is dominated by the velvet mesquite (*Prosopis velutina*).

Historically, the riparian areas were important for agricultural purposes, including grazing. The agricultural practices have caused soil compaction and altered the vegetation. The high number of non-native and exotic species in the riparian area is related to these historic activities.

At Montezuma Well, the dominant soil type is the Guest soil series, characterized by bottomland, clayey soil derived from flood-borne, fine sediment deposits (SCS and USFS 1972). These soils support velvet mesquite and cat claw acacia (*Acacia greggii*) and tobosa (*Hilaria mutica*). The second most common soil type is the Riverwash soil.

The gallery riparian forest alongside Wet Beaver Creek at Montezuma Well supports Arizona sycamore and Arizona ash vegetation and the Fremont cottonwood (*Populus fremontii*), a species not found at the Castle, and a dense carpet of smooth brome (*Bromus inermis*), an exotic perennial grass. Exotic grasses are also found in great numbers in other areas of the mo-

nument, including the old pasture lands along the historic ditch and near the picnic grounds. Velvet mesquite is spreading into the pasture near the picnic area since active grazing was ceased in that area of the monument. Several soils within the Retriever association underlie the former pasture lands (Rowlands 1999).

The soils and vegetation in the bottom land / riparian areas of Montezuma Castle National Monument and the former pasture lands at Montezuma Well have been severely disturbed; the native plant communities and soils have been removed or displaced from their natural states. The disturbance has occurred primarily as a result of agricultural activities. This is reflected in the high number of nonnative introduced and exotic species present at Montezuma Castle National Monument, especially the Mediterranean annual grasses. Although Beaver Creek still maintains a natural flow regime, the amount of water flowing through the creek has changed as a result of upstream water withdrawals.

Tuzigoot National Monument

At Tuzigoot National Monument the floodplain is quite broad, the Verde River is wider and more meandering, and the stream bottom composition contains more gravel and cobble that form large bars at low flows (NPS 1992). Retriever soils are present in all areas of the monument except Tavaschi Marsh. The upland vegetation is dominated by velvet mesquite, creosote bush, crucifixion thorn, tamarisk (*Tamarix chinensis*), and yucca (*Yucca* spp.). Vegetation in the riparian area is dominated by tree species, primarily cottonwood, willows (*Salix* spp.), desert willow (*Chilopsis linearis*), and Arizona sycamore. Peck's Lake and Tavaschi Marsh possess emergent vegetation such as cattails and bulrush (*Scirpus* spp.), which grow along the edges of the water bodies and may extend several yards from the edge of the shore into the water. Numerous small, semi-aquatic plants typically

form understories within the marsh communities along the banks of the Verde River (Minckley and Brown 1982).

WILDLIFE

This section addresses species found at both Montezuma Castle National Monument and Tuzigoot National Monument. The riparian and upland environments in the monuments support a wide variety of wildlife. Terrestrial species include birds, large and small mammals, reptiles, rodents, and insects. Aquatic species include fish, amphibians, and insects.

Approximately 50 species of mammals are known to live in the monuments. These include the desert cottontail (*Sylvilagus audubonii*), ground squirrels (*Sciuridae* family), elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), grey fox (*Urocyon cinereoargenteus*), bobcat (*Felis rufus*), coyote (*Canis latrans*), and rarely a mountain lion (*Felis concolor*). In the uplands, the hot climate and lack of water favors smaller mammals that have an easier time finding shelter and require less food and water. Reptiles found at the monuments include anurans, turtles, spiny lizards, colored lizards, and diamondback rattlesnakes. Because of the high carbon dioxide levels in the water, no fish live in Montezuma Well. At least five endemic species live only in Montezuma Well: a diatom, a springtail, a water scorpion, an amphipod, and a leech -- the most endemic species in any spring in the Southwestern United States.

Other water sources in the monuments support a variety of native species of trout and sucker and nonnative fish species, including carp, bass, and catfish.

The most conspicuous wildlife species in the monument are the birds. Many breeding species are found in the riparian areas. The uplands also provide breeding, post breeding, migrating, and wintering habitat for avian species. During the breeding season, the black-throated sparrow (*Amphispiza bilineata*), Bewick's wren (*Thryo-*

manes bewickii), and brown-headed cowbird (*Molothrus ater*) are very common. Because a variety of habitat types are present in the monuments, even the most predominant species in a given year account for no more than 12% of the species observed. There are 49 avian breeding species in the monuments; this high number reflects the topographic and habitat variability in the monuments as well as the presence of the riparian area. Approximately 75% of the avian breeding species are migrants and leave the monuments during the fall and winter.

The proposed alternatives include actions that could impact wildlife habitat in the monument. These actions include the designated trails in all three sites, the boardwalk at Tuzigoot National Monument, and the overlook at Montezuma Castle National Monument. Except for the overlook, birds are most likely to be affected by the proposed actions. Development of the overlook could affect small mammals.

THREATENED AND ENDANGERED SPECIES

This section addresses species that are listed on the U.S. Fish and Wildlife Endangered Species List or are afforded protection by the Arizona Game and Fish Department. Although special-status species could potentially occur in Yavapai County, Arizona, informal consultation with the U.S. Fish and Wildlife Service indicated that only three listed species would be potentially affected by actions at Montezuma Castle or Tuzigoot national monuments. The species not fully evaluated in the environmental assessment are not expected to occur at the monuments or if they could be transitory (for example, the bald eagle), there would be no effect on the species. Table 7 lists the three species that were fully evaluated; appendix D presents all the listed species with potential to occur in Yavapai County, Arizona.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is one of five subspecies of the willow flycatcher. A neotropical migrant, the flycatcher breeds in the southwestern United States and winters in Mexico, Central America, and extreme northern South America. The flycatchers are found in riparian ecosystems within the 100-year floodplain or in a flood-prone area. This species uses riparian habitat for feeding, sheltering, and cover while breeding and migrating. Flycatchers prefer to nest in dense patches of willow (*Salix* spp.), buttonbush (*Cephalanthus occidentalis*), box elder (*Acer negundo*), and *Baccharis* spp. Flycatchers are also known to nest in nonnative vegetation such as tamarisk. In almost all cases, water that is still or slowly moving or saturated soils are present at or near the breeding site (USFWS 2002). Nests are open cup structures typically placed in the fork of a branch from 6.5 to 23 feet above ground (USFWS 2002).

Riparian areas are dynamic, and the size and location of flycatcher habitat changes over time in response to natural disturbances and regeneration events such as flood, fire, and drought (USFWS 2004). As a result, habitat may become unsuitable for breeding through maturation or disturbance but could remain suitable for migration or foraging. It is not uncommon for patches that have been disturbed to cycle back into suitability for breeding. (USFWS 2004). About 90% of the flycatcher's traditional habitat has been lost

or modified such that it no longer provides suitable habitat.

The southwestern willow flycatcher breeds early in the season. The flycatcher does not breed in any of the monument sites but forages at both Montezuma Castle and Tuzigoot national monuments. The flycatcher typically arrives in the region in late May to early June and stay through August. Flycatchers are not known to use the habitats at Montezuma Well. This species prefers relatively dense vegetation to reduce predation both from mammals such as coyotes, foxes, and cowbirds. The flycatcher is shy and easily disturbed. Management considerations for the flycatcher include how to reduce potential disturbance from visitors that approach suitable habitats.

Montezuma Castle National Monument. Critical habitat for the southwestern willow flycatcher has been designated along the Verde River. The flycatcher does not currently nest in the riparian area at Montezuma Castle National Monument, but it does forage in the monument. The riparian vegetation at Montezuma Castle National Monument is not ideal for nesting because it is primarily gallery forest, although there are some patches of preferred vegetation along Beaver Creek. Although the riparian habitat is dynamic, it is unlikely that the habitat will improve because typically the alluvial deposits along Beaver Creek have a heavy bed load as opposed to the fine sediments preferred by willows and other plant species that the flycatcher prefers for nesting.

TABLE 7: ENDANGERED, CANDIDATE, AND SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

Common Name	Scientific Name	Status ^{a/}	Critical Habitat Present?
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, AWSC	Yes
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE, AWSC	No
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	FC, AWSC	No

a/ Status: FE = federal endangered; FC = federal candidate; AWSC = Arizona wildlife of special concern.

Tuzigoot National Monument. Critical habitat for the flycatcher has been designated on the Verde River just outside the monument boundary south of the access road. A breeding pair of the flycatchers has been documented in this area. The river channel south of the access road is frequently disturbed during ditch maintenance activities. As a result, there are finer sediments in the channel that supports patches of vegetation that the flycatcher prefers for nesting. The flycatcher uses the nearby Tavaschi Marsh for foraging.

Yuma Clapper Rail

Habitat for the Yuma clapper rail (*Rallus longirostris yumanensis*) in Arizona includes a variety of marsh types dominated by emergent plants, including cattail (*Typha domingensis*), bullwhip bulrush (*Juncus californicus*), and sedges (*Cyperaceae* family). Rail habitat requires a wet substrate, such as a mudflat, sandbar, or slough bottom with moderate- to high-density vegetation adjacent to shorelines. The only suitable habitat for the Yuma clapper rail at the monuments is in Tavaschi Marsh near Tuzigoot National Monument. The Yuma clapper rail is known to forage in the monument but has not been documented nesting in the marsh. It is likely that the Yuma clapper rail uses the marsh during migration. Sedges and grasses in Tavaschi Marsh typically cover the higher-elevation, drier portion of the marsh while dense stands of cattails occupy the lower-elevation, wetter sections of

the marsh. The preferred habitat for the rail is in the wetter sections of the marsh.

Yellow-billed Cuckoo

The western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*) is a candidate for federal listing, but listing actions are precluded by higher-priority listings (*Federal Register* 71 FR 53755). This species is considered Wildlife of Special Concern by the state of Arizona (Arizona Game and Fish Department 2007). The yellow-billed cuckoo is a riparian obligate species. Suitable habitat for this species in the western United States is limited to narrow, and often widely separated, riparian cottonwood-willow galleries. Because it nests relatively late in the season when water levels are lower, the cuckoo prefers the relatively humid environment of the gallery forest. The population in Arizona is probably the largest remaining cuckoo population in states west of the Rocky Mountains, but cuckoo numbers in 1999 were substantially less than some previous estimates for Arizona as a result of habitat loss and degradation. One hundred sixty-eight yellow-billed cuckoo pairs and 80 single birds were identified in Arizona in 1999, based on preliminary results from a statewide survey which covered 265 miles of river and creek bottoms. Losses of riparian habitats from historic levels have been substantial in Arizona. Despite this, the cuckoo is still found in all counties in Arizona. Unlike the southwestern willow flycatcher, these birds are relatively secretive,

nest high in the canopy, and are more difficult to disturb.

The loss, degradation, and fragmentation of riparian habitat have been identified as the primary factors causing yellow-billed cuckoo declines in the western United

States. There is potentially suitable nesting and foraging habitat in Montezuma Castle National Monument and near Tuzigoot National Monument along Beaver Creek and the Verde River.

VISITOR USE AND EXPERIENCE

The planning team identified visitor experience as an important issue that could be appreciably affected under the alternatives. The Organic Act and *Management Policies 2006* direct the National Park Service to provide visitor enjoyment opportunities that are uniquely suited and appropriate to the resources found in the monuments. Several aspects of visitation and enjoyment were evaluated, including visitor use characteristics, visitor experience and recreational opportunities, orientation information and interpretation, and access for disabled visitors.

To provide the sociological data necessary to support management planning, Dave White and Randy Virden from Arizona State University conducted a visitor study (White and Virden 2004). The study, referred to as the 2003-2004 visitor study, was conducted in two phases, October to November 2003 and March to May 2004, to capture information from different visitor use seasons. The study collected information about visitor use levels, demographic characteristics, management preferences, and perceptions of natural, social, and managerial conditions. A goal was to support the identification of additional opportunities to enhance visitors' understandings, education, and appreciation of the monuments, and to improve interpretive programs and services. Data was collected from current adult visitors at Montezuma Castle, Montezuma Well, and Tuzigoot through onsite and mail survey questionnaires. Three versions of each instrument (onsite and mail) were produced, with identical questions on each version, but customized so that the instrument cover and questions specified the site where the visitor was contacted.

VISITOR USE CHARACTERISTICS FOR ALL THREE SITES

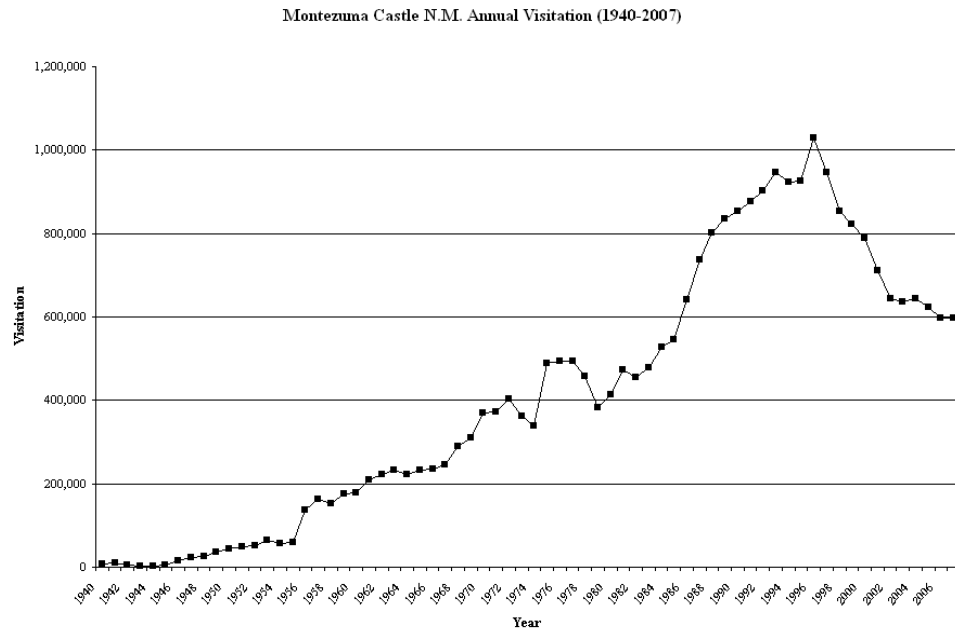
Visitation at Montezuma Castle is shown in figure 1. Visitation was quite low during World War II, but then climbed steadily, peaking at about a million visitors in 1996. A decline then occurred, but for the past six years, visitation has been relatively stable at more than 600,000 visitors annually.

Despite its small size, Montezuma Castle is among the most heavily visited national park units in the southwest, is one of the most visited prehistoric southwestern ruins, and is the best-known Sinaguan site. Visitation is facilitated by the monument's location along the primary Grand Canyon tour route, its convenient access from Interstate 17, its proximity to the Phoenix metropolitan area, and the widely known, well-preserved condition of the Castle.

Montezuma Well visitation is shown in figure 2. This site typically records about 25% to 30% of the Castle visitation. The visit to Montezuma Well can be a side trip for visitors to the Castle and other public lands in the region. However, the shaded, scenic picnic area at Montezuma Well attracts a relatively high amount of return, local visitation. As a result, the 2003-2004 visitor study indicated that about only about 40% of Phoenix-area residents visiting Montezuma Well also had visited Montezuma Castle.

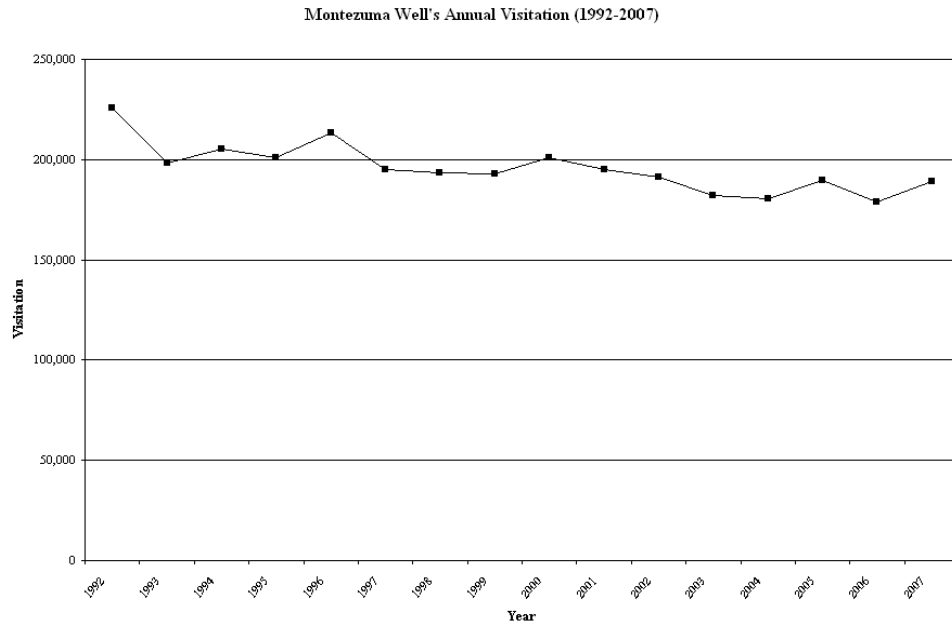
Tuzigoot visitation is shown in figure 3. Visitation peaks occurred around 1970 and again in the early 1990s, when almost 140,000 people visited the site each year. Since then, numbers have stabilized at about 115,000 visitors annually. The distance of this national monument from major, regional travel routes results in visitation numbers that are lower than those of Montezuma Castle National Monument.

FIGURE 1: MONTEZUMA CASTLE NATIONAL MONUMENT ANNUAL VISITATION, 1940-2007

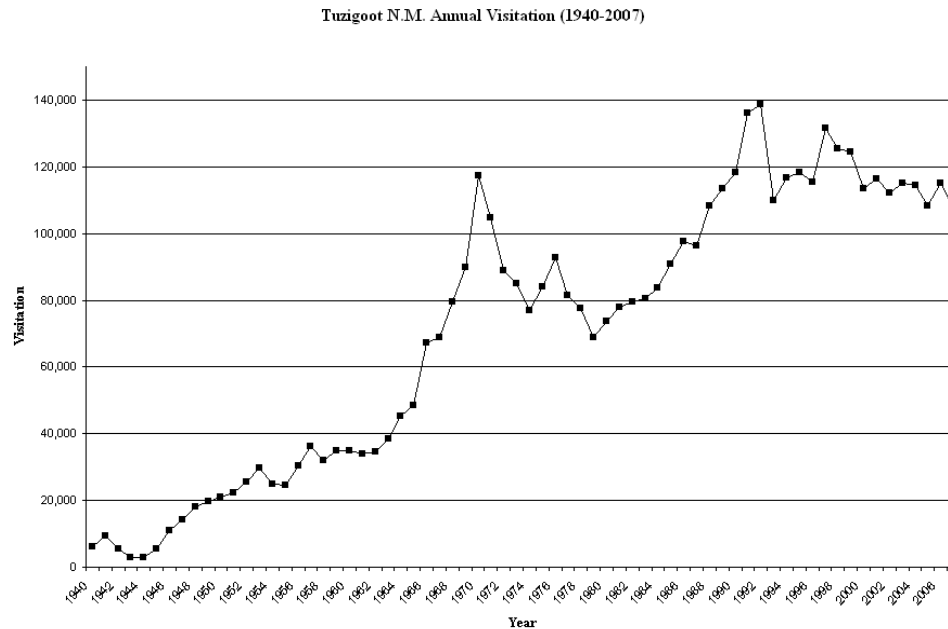


Source: National Park Service, 2004

FIGURE 2: MONTEZUMA WELL ANNUAL VISITATION, 1992-2007



Source: National Park Service, 2004

FIGURE 3: TUZIGOOT NATIONAL MONUMENT ANNUAL VISITATION, 1940-2007

Source: National Park Service, 2004

While annual visitation numbers at all three monument units are relatively stable, all have lower visitor numbers than occurred in the early 1990s. While the socioeconomic section in chapter 3 discusses possible contributing factors, there is no clear consensus as to the cause of this decline. A similar decline is occurring in many national parks around the country.

Based on the surrounding region's population growth, it is likely that visitation will increase over the next 15 to 20 years. The towns and cities in the Verde Valley are expected to grow substantially in the next two decades. Visitation is expected to increase because of the continuing population growth and the development of tourism services in this area (Verde River Corridor Project Steering Committee 1991).

Visitation by month for the six years from 2002 through 2007 is shown in figure 4 for

Montezuma Castle National Monument. Similar data are provided for Montezuma Well in figure 5 and for Tuzigoot National Monument in figure 6. The figures show that peak visitation for all three monument units occurs in March, with a second, smaller peak in October. During the hottest summer months, visitation declines to levels similar to those occurring in February and November. December and January are the months with the lowest visitation.

Regional use is more evident on weekends and holidays. Heaviest use occurs during mid-morning to early afternoon, coinciding with tour bus schedules and the travel time from the major destination or departure points of Phoenix and the Grand Canyon.

FIGURE 4: VISITATION BY MONTH AT MONTEZUMA CASTLE NATIONAL MONUMENT, 2002-2007

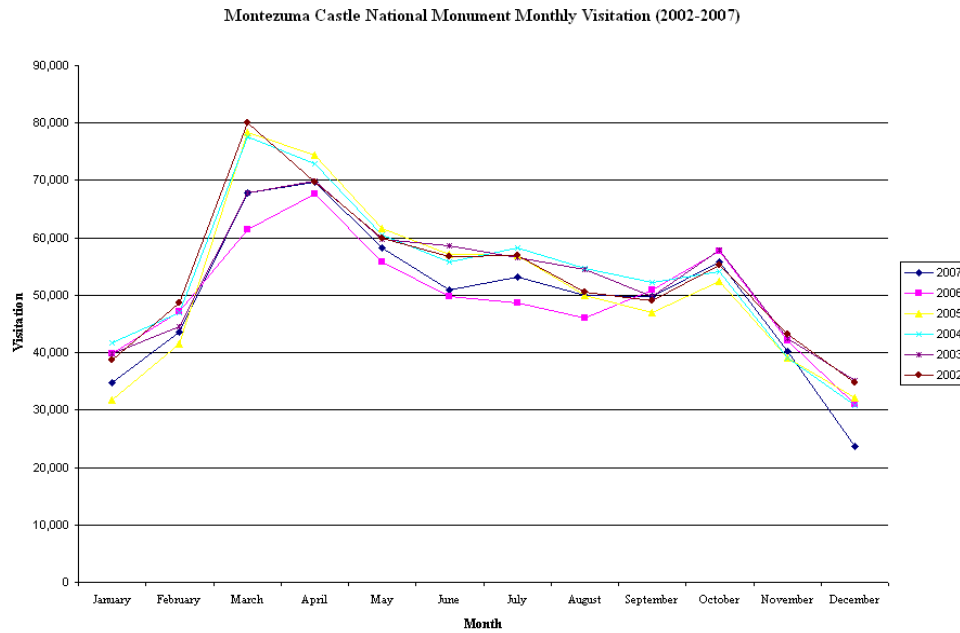


FIGURE 5: VISITATION BY MONTH AT MONTEZUMA WELL, 2002-2007

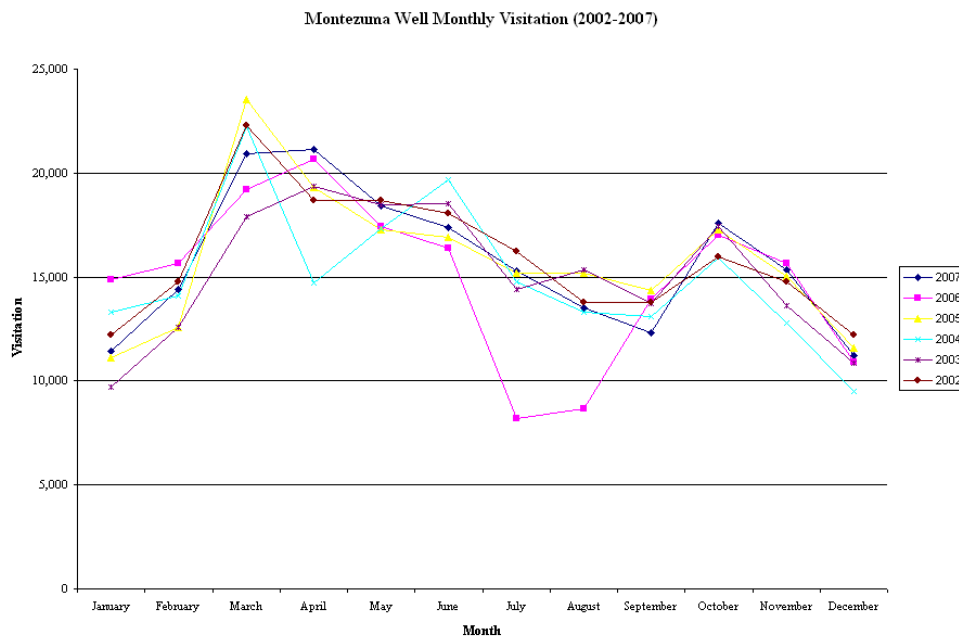
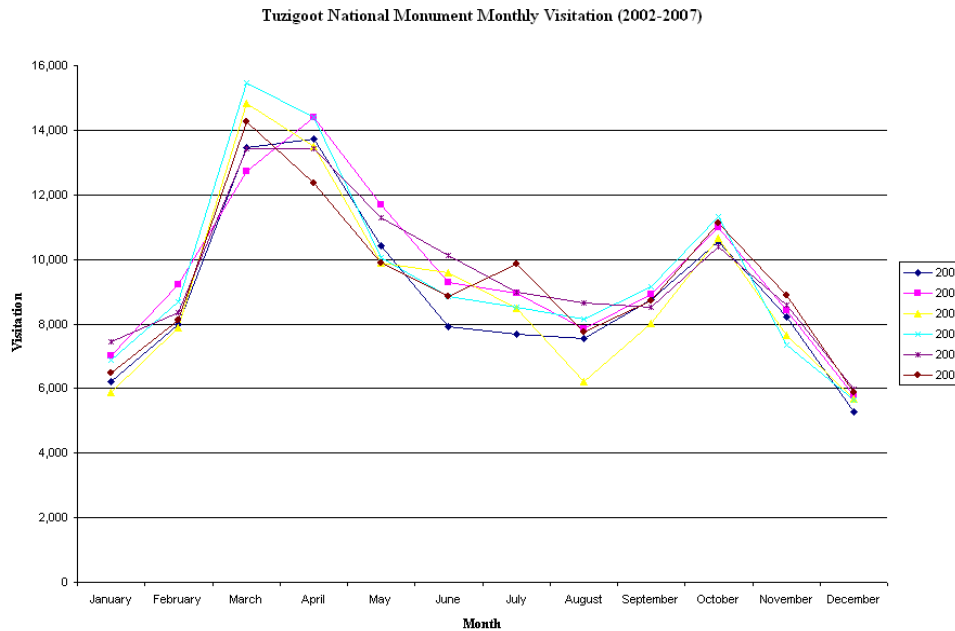


FIGURE 6: VISITATION BY MONTH AT TUZIGOOT NATIONAL MONUMENT, 2002-2007

The 2003-2004 visitor study identified other visitor characteristics that are important to understanding and planning for visitor use for all three areas. Highlights of relevant data on general visitor characteristics and use at all three sites follow.

- Respondents included slightly more women than men.
- Average age of respondents ranged from 48 to 51 years at the monuments.
- For more than nine of ten visitors, the NPS site where the visitor was contacted was one of multiple destinations away from home.
- About two thirds were traveling in groups of two to three people; groups of more than five were uncommon.
- A fifth of visitors were traveling with children under 16 years.
- Nearly all visitors (99.2%) stayed less than three hours at the monuments.
- About 40% of visitors were making their first trip to the monuments.

- About 11% had an individual with a disability, with the most common type noted as “mobility.”
- Most visitors also visit other communities in the region, including Sedona, Phoenix, Flagstaff, the Grand Canyon, and Jerome.
- The most frequently visited areas for overnight visits included Sedona, Phoenix, Flagstaff, the Grand Canyon, Cottonwood, and Camp Verde.

Figure 7 shown the percentages of visitors who went to one site, two sites, or all three sites. As shown in the figure, visits to Montezuma Castle only, and visits to all three sites, each accounted for about 25 percent of visitors. Visitors were least likely to visit Montezuma well only (about 4 percent) or a combination of Tuzigoot National Monument and Montezuma Well (about 1 percent. Tuzigoot National Monument only, the combination of Montezuma Castle and Montezuma Well, and the combination of Montezuma Castle and Tuzigoot National Monuments each was represented by 12% to 15% of visitors.

Weekday versus weekend visits also are shown in figure 7. Weekend visitors were slightly more likely than weekday visitors to visit Montezuma Castle only, experience Montezuma Castle and Montezuma Well on the same visit, or visit all three sites. In contrast, weekday visitors were more likely to visit Tuzigoot National Monument only, or to experience Montezuma Castle and Tuzigoot on the same visit. However, differences between weekday and weekend visits varied by just a few percentage points.

Figure 8 shows the top five states of residence for visitors who responded to the visitor study. For all three monument units, more than 20% of visitors were Arizona residents, and for Montezuma Well, a third of all visitors were from Arizona. Californians made up more than 10% of visitors at all three sites. Residents from Washington, New York, and Illinois each represented from 3% to 5% of visitors.

VISITOR SAFETY AT ALL THREE SITES

The primary risks to visitor safety are participating in outdoor visitor activities in a desert environment. Visitors may also perceive risk to personal safety through contact with other visitors in a public setting.

The safety risk associated with visiting the monuments is low.

MONTEZUMA CASTLE NATIONAL MONUMENT

Visitor Experience and Recreational Opportunities

Most visitors to the Castle spend a short time in the monument. Visitors tend to

enter through the visitor center, wander through the exhibits briefly, and exit on to the Castle trail. During peak hours, the Castle visitor center can be very busy, with much movement and noise.

The walk to the Castle is short but stunning. As the visitor proceeds along the paved walk, the Castle slowly comes into view. A wide viewing area with seating is available at the base of the Castle. This area allows visitors time for reflection and contemplation. The visitors tend to be quiet and reverential when viewing the dwelling. The entire loop trail tends to be a contemplative and relaxed environment. However, during peak use times or during interpretive programs along the loop trail, the solitude and peacefulness associated with viewing the Castle may be interrupted for short periods of time.

Continuing on the Castle loop trail leads visitors to another Sinaguan dwelling, Castle A. A viewing platform and small amount of seating is available at the base of this structure. The backside of the loop trail includes a spur trail to Beaver Creek. Visitors can view the creek from behind a rock wall. The creek allows quiet reflection, wildlife viewing, photography, and catching a cool breeze. Currently, there are no facilities to encourage visitors to stop and spend time in this area or bring them close to the water. Many people noted during public scoping that they particularly enjoy the serenity of the creek at the Castle as part of their visit to the monument.

FIGURE 7: PERCENTAGES OF VISITORS SEEING ONE OR MORE SITES

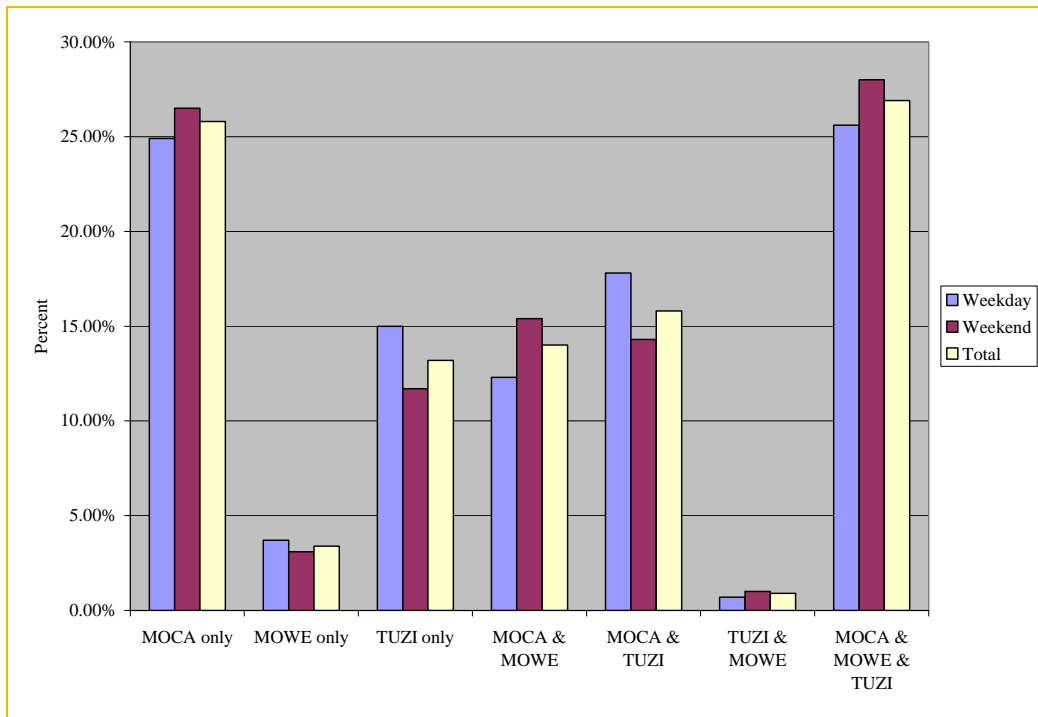
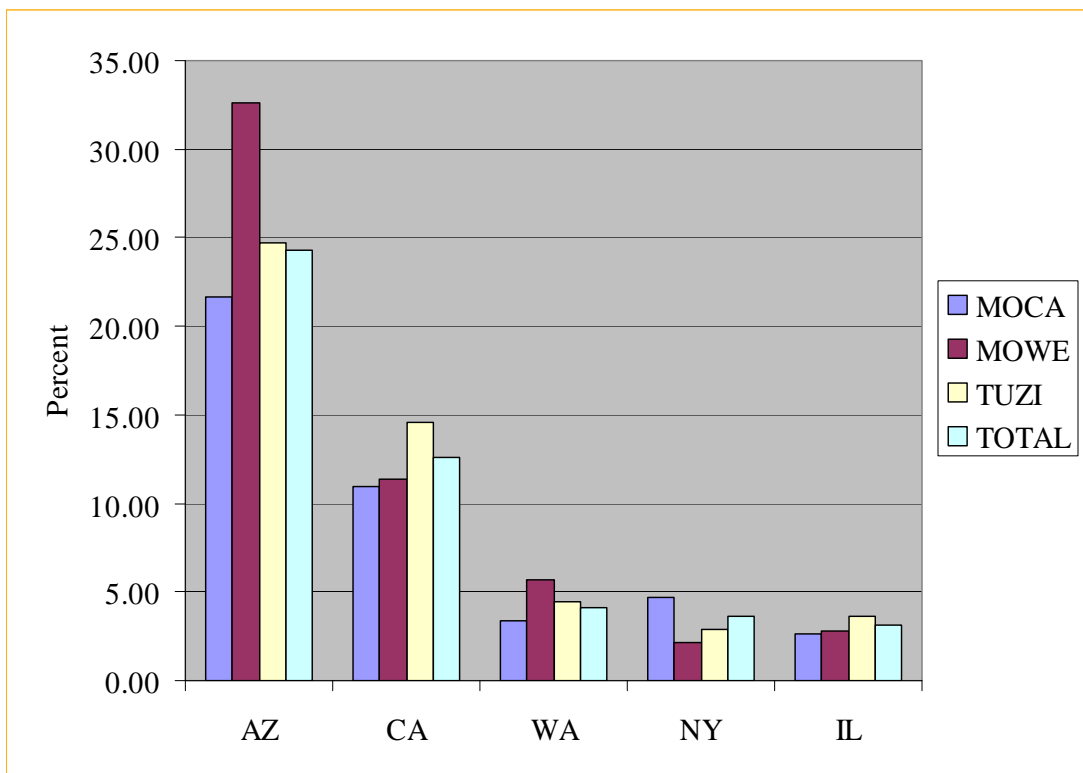


FIGURE 8: TOP FIVE STATES OF RESIDENCE FOR VISITORS



During public scoping, several people noted concern over the level of development on trails and walkways at the monument. These individuals suggested that the trails should be kept as primitive as possible to reflect the rawness of the period of history, while meeting the needs of disabled visitors to the greatest degree possible. Further, several people commented on the lack of intimacy with the resources at the Castle because of physical barriers (for example, fencing) and restrictions (for example, signs to stay on trails).

At the end of the loop trail, near the parking lot, is a shaded picnic area. Visitors can use this area before or after the visit to view the Castle.

Access to the lands within the monument that surround the developed area is limited. Because of the sensitivity of archaeological resources throughout the monument, visitor access to these areas has been highly restricted. There is currently no visitor access to the unusual fossil area consisting of mammal footprints dating to the Pliocene Epoch. A parking area was constructed at one point, but no trail or interpretive exhibit was developed to provide access. The area is currently closed to visitors.

Recreation activities available to visitors include sightseeing, wildlife watching, walking, and picnicking. Guided ranger programs are available in addition to contact with roving interpreters. The most common activities for visitors to Montezuma Castle are walking along paved trails, taking photographs, visiting archaeological sites, going to the visitor center, and shopping at the gift shop (White and Virden 2004). When asked to choose their primary activity, the most common responses were visiting archaeological sites, walking along paved trails, and taking photographs.

Learning about history, prehistoric cultures, and Native American traditions were important motivations for visiting the monument. Having an authentic experience

and developing a connection with Native American cultures were also highly rated motives. When reflecting on the emotional aspects of their experiences, respondents felt impressed by the engineering achievements of the Sinaguan people and by the success of prehistoric cultures living in the desert. Respondents also felt pride at the preservation of the cultural resources and felt they had learned about human history in the Verde Valley. Most survey respondents were extremely satisfied (22%) or very satisfied (57%) with their visit (White and Virden 2004).

During the period of heavy use in the early to mid 1990s (up to 1 million visitors per year), the existing vehicle parking was often inadequate for the level of visitation, and some potential visitors were unable to park. Further, this level of visitation caused crowding of pedestrian traffic flow around the visitor center and along the loop trail at the Castle. Several public comments were also received during public scoping for the general management plan about the interference of the visitor experience from heavy tour bus visitation as a result of associated noise and smells.

Visitors were asked to rank other topics of concern during the 2003-2004 visitor study. The study found that visitors were most concerned with the following social and environmental conditions at the Castle: theft of cultural artifacts, visual impact of the mine tailings at Tuzigoot, and poor water quality. Other social and environmental conditions of concern included collecting wood and rocks, defacing or destroying natural resources and loss of open space. Further, visitors were asked to evaluate the importance of and their satisfaction with certain programs and services at the Castle. Visitors ranked monument maintenance and friendliness of staff as two of the most important conditions. They did not identify any major deficiencies in any of the monument's programs and services. Finally, visitors were asked to evaluate the importance of and their

satisfaction with certain facilities at the Castle. The topics that visitor ranked as relatively important but with relatively low satisfaction might need some improvement, including cleanliness of restrooms, availability of drinking water, availability of parking, and educational exhibits at the visitor center (White and Virden 2004).

Orientation, Information, and Interpretation

Visitors receive most interpretative information in the visitor center and along the loop trail at the base of the Castle. Wayside exhibits interpret the cultural and natural resources found in the area. A diorama and audio program depicts the interior view of the cliff dwellings. Recently improved visitor center museum exhibits are informative and attractive, detailing the major interpretive themes of the monument. Currently, there are no facilities for group interpretation opportunities, and several public comments were received during the scoping phase suggesting that an amphitheater was needed at the Castle. Further, many public comments, especially in response to the open-ended questions on the 2003-2004 visitor study, requested more “hands-on” activities for interpretive demonstrations and programs.

Visitors are most interested in the following new programs and services: scheduled ranger-led tours of archeological sites, nature trails, Native American cultural demonstrations, and living history presentations. The most highly rated topics for interpretive and educational programs were reasons for the successes and failures of human settlements in the desert, ties between past and present Native American cultures, Native American travel and trade routes in the area, link between prehistoric and modern human cultures, number and variety of cultural sites in the Verde Valley, and how water is the source of life in the desert (White and Virden 2004).

Access for Disabled Visitors

The monument has been improving accessibility for six years. About 10% of visitor groups contacted at the Castle during the 2003-2004 visitor study included one or more individuals with a disability, with mobility being the most frequently mentioned. The monument is therefore concentrating on improving mobility accessibility first. The visitor center and the paved trail are accessible to wheelchairs. A portion of the Castle trail is too steep for wheelchairs and is marked with a sign. The picnic area is not accessible to wheelchairs. Funding in fiscal year 2009 will allow replacement of some sidewalk sections to meet accessibility standards. While many interpretative programs involve visual elements such as traditional craft demonstrations and Native American traditional dances, others include non-visual activities such as flute playing, touch tables, participation in traditional crafts, corn grinding, and agave fiber weaving. Renovations to the museum in 2002 removed physical and height barriers. The museum has no audio program, so no devices are needed for the hearing-impaired visitors, who can see the displays and read the text. Large fonts with artifact- and graphics-exhibits assist the visually impaired, and rangers can read or describe exhibits to blind visitors. For those with mental disabilities, a hierarchy of exhibits from simple text and illustrations to complex drawings provides a wide array of information.

MONTEZUMA WELL

Visitor Experience and Recreational Opportunities

The Well is reached via a paved trail featuring a series of modern wayside exhibits that offer cultural and natural resource information. Visiting Montezuma Well tends to be a quieter and slower-paced experience than visiting Montezuma Castle. Visitors tend to wander along the rim of Montezuma Well via the paved trail,

taking time to watch for wildlife and view the ruins along the well's interior walls. The Well outlet is also accessible via a paved trail. A walk down to Montezuma Well rewards visitors with a quiet, shady spot for rest and contemplation. Beaver Creek is directly below the sitting area near the outlet, surrounding visitors with the sounds of slow running water.

In addition to Montezuma Well and adjacent ruins, visitors to the site can still see traces of ancient, lime-encrusted irrigation ditches that extend from the well's outlet, a remnant of past farming activity.

The picnic area at Montezuma Well is shady and lush, with several picnic tables and a large green space area. It is one of the most pleasant picnic areas in the valley and receives relatively high levels of use. Beaver Creek is near the picnic area, but currently no designated trail provides access to the water. During the public scoping period for the general management plan, the public expressed a desire for trail opportunities to the creek from the picnic area.

Some informal trails are used by local residents to access the land around the developed area in Montezuma Well. These trails are not documented or designated. As the area around Montezuma Well continues to grow with residential development, demand for trail-based recreation opportunities may increase.

Recreation activities available to visitors include sightseeing, wildlife watching, walking, and picnicking. Contact with roving interpreters is also possible during a visit. According to the 2003-2004 visitor study, the most common activities for visitors to Montezuma Well are walking along paved trails, taking photographs, and visiting archeological sites. When asked to choose their primary activity, the most common responses were walking along paved trails and visiting archeological sites.

For respondents to the 2003-2004 visitor study, having an authentic experience of

past cultures and learning about prehistoric cultures were important motivations for visiting the site. Learning about Native American traditions and developing knowledge of history were also important motivations. When reflecting on the emotional aspects of their experiences, respondents felt impressed with how prehistoric cultures thrived in the Verde Valley and they felt proud to see the preservation of archeological resources. Most survey respondents were extremely satisfied (25%) or very satisfied (56%) with their visit.

Visitors were also asked to rank topics of concern. Visitors were most concerned with the following social and environmental conditions at Montezuma Well: theft of cultural artifacts and poor water quality. When asked to evaluate the importance of and their satisfaction with certain programs and services at Montezuma Well, visitors ranked monument maintenance and friendliness of staff as two of the most important conditions. They identified availability of information about monument activities as one service that might need some minor improvements. Finally, visitors were asked to evaluate the importance of and their satisfaction with certain facilities at Montezuma Well. The topics that visitor ranked as relatively important but with relatively low satisfaction might need some improvement, including availability of drinking water and archeological displays (White and Virden 2004).

Orientation, Information, and Interpretation

Interpretive and regulatory information is provided at the contact station at Montezuma Well. Currently, the contact station is a prefabricated concrete building placed in the late 1990s that has space for two or three staff. Visitors get information from the staff through a sliding window in the trailer.

Personal services interpretation is handled by a roving interpreter who makes informal contacts with visitors. A series of way-

side exhibits provide cultural and natural resource information on the way to Montezuma Well. Currently, there are no facilities for group interpretation opportunities, and several public comments received during the scoping phase of the general management plan suggested that an amphitheater was needed at Montezuma Well. Further, many public comments, especially in response to the open-ended questions on the 2003-2004 visitor study, requested more “hands on” activities for interpretive demonstrations and programs.

Visitors to Montezuma Well are most interested in the following new programs and services: nature trails, trail access to streams, Native American cultural demonstrations, scheduled ranger-led tours of archeological sites, and living history presentations. The most highly rated topics for interpretive and educational programs were reasons for the successes and failures of human settlements in the desert, Native American travel and trade routes in the area, number and variety of cultural sites in the Verde Valley, ties between past and present Native American cultures, and rare species of plants and animals in the Verde Valley (White and Virden 2004).

Access for Disabled Visitors

Although the monument has been improving accessibility for six years, providing accessibility is challenging because of limited space for visitor orientation. The Well relies primarily on posters for interpretation; plans call for an expanded contact station to meet visitor needs, including accessibility. About 9% of visitor groups contacted at Montezuma Well during the 2003-2004 visitor study included one or more individuals with a disability, with mobility being the most frequently mentioned disability. Most of the paved trails are not accessible via wheelchair. Potential new routes, which would require archeological clearance and new construction, have been identified.

TUZIGOOT NATIONAL MONUMENT

Visitor Experience and Recreational Opportunities

The approach road to Tuzigoot passes an extensive area of copper mine tailings. The tailings were covered and the area restored in 2007. Once visitors arrive at the monument, they enter the visitor center that displays an extensive collection of Sinaguan artifacts. Visitors leave the visitor center along a paved trail that ascends to the top of the pueblo at the top of the hill.

The trip through the pueblo at Tuzigoot allows visitors to come into close contact with a major surface ruin. Continuing stabilization of the Tuzigoot ruins helps visitors understand the architectural style and the size of the rooms. During public scoping, several comments were received from visitors who felt Tuzigoot was particularly special due the intimacy of contact between visitors and the resources.

Visitors can visit the top of the pueblo and have a 360 degree view of the surrounding region.

The natural setting around the north and east sides of the pueblo highlights the integral part that the area’s natural resources played in the life of prehistoric and historic peoples. The early residents were attracted to the natural resource communities in the riparian and marsh areas and adjacent uplands. Experiencing the natural environment is crucial to experiencing the cultural setting of the hilltop pueblo.

Currently, visitors can take the Tavaschi Marsh Overlook trail to view Tavaschi Marsh, one of the few freshwater marshes in Arizona. The marsh provides opportunities for wildlife viewing, recreation opportunities, and exploration of the Sinaguan culture.

No designated trails link to the surrounding public lands such as Dead Horse

Ranch State Park, the Verde River Greenway, and Coconino National Forest. During the public scoping period, the public expressed a desire for additional trail connections to the monument from surrounding public lands. There is also limited visitor access to other areas within the monument's legislated boundary, but most of this area is not owned by the National Park Service. Current access to these sites is determined by the existing property owners.

Recreation activities available to visitors include exploring a major surface ruin, sightseeing, wildlife watching, and walking. Guided ranger programs are available in addition to contact with roving interpreters. The most common activities for visitors to Tuzigoot are walking along paved trails, taking photographs, visiting archeological sites, and going to the visitor center. When asked to choose their primary activity, the most common responses were visiting archeological sites and walking along paved trails (White and Virden 2004).

For respondents to the 2003-2004 visitor study, learning about Native American traditions, prehistoric cultures and history were important motivations for visiting the monument. Having an authentic experience of past cultures and experiencing a connection with Native American cultures were also important motivations. When reflecting on the emotional aspects of their experiences, respondents felt impressed with how prehistoric cultures thrived in the Verde Valley and the engineering achievements they made in those days. Respondents also felt pride to see the preservation of archeological resources. Most respondents were extremely satisfied (18%) or very satisfied (54%) with their visit.

Visitors were also asked to rank topics of concern during the 2003-2004 visitor study. Visitors were most concerned with the following social and environmental conditions at Tuzigoot: theft of cultural

artifacts, poor water quality, visual impact of the mine tailings at Tuzigoot, and loss of open space. Further, visitors were asked to evaluate the importance of and their satisfaction with certain programs and services at Tuzigoot. Visitors ranked monument maintenance and friendliness of staff as two of the most important conditions. Overall, visitors seem highly satisfied with programs and services at Tuzigoot. Finally, visitors were asked to evaluate the importance of and their satisfaction with certain facilities at Tuzigoot. The only topic that visitor ranked as relatively important but with relatively low satisfaction, which therefore might need some improvement, was the availability of drinking water.

Orientation, Information, and Interpretation

The visitor center is a small museum with many artifacts from the Sinaguan people on display. It is one of the few museums interpreting ancient Sinaguan culture in Arizona. During the public scoping period, several people noted that the museum at Tuzigoot should grow in size. Renovation of the museum's exhibits will be completed in 2008. In addition to the museum, the trail loop through the pueblo includes wayside exhibits.

The 2003-2004 visitor study indicated that visitors to Tuzigoot are most interested in the following new programs and services: Native American cultural demonstrations, nature trails, scheduled ranger-led tours of archeological sites, and living history presentations. The most highly rated topics for interpretive and educational programs were reasons for the successes and failures of human settlements in the desert, ties between past and present Native American cultures, Native American travel and trade routes in the area, number and variety of cultural sites in the Verde Valley, link between prehistoric and modern human cultures, and how water is the source of life in the desert.

Access for Disabled Visitors

The monument has been improving accessibility for six years. About 13% of visitor groups contacted at Tuzigoot during the 2003-2004 visitor study included one or more individuals with a disability, with mobility being the most frequently mentioned. The visitor center and the Tavaschi Marsh Overlook trail are wheelchair accessible. Most trails are not accessible via wheelchair. Wheeled vehicles, such as wheelchairs and baby strollers, are not recommended on the trail through the pueblo. Potential new routes, which would require archeological clearance and new construction, have been identified.

Planned renovations to the museum (now in the architectural and engineering design phase) will address existing accessibility issues. The museum has no audio program, so no devices are needed for hearing-impaired visitors, who can see the displays and read the text. Large fonts with artifact- and graphics-exhibits assist the visually impaired, and rangers can read or describe exhibits to blind visitors. For those with mental disabilities, a hierarchy of exhibits from simple text and illustrations to complex drawings provides a wide array of information.

Regional Recreational Opportunities

The Verde Valley, lying under the spectacular cliffs of the Mogollon Rim of Central Arizona, provides a wealth of opportunity to enjoy numerous cultural and natural resources from past to present.

Near all of the monuments are Coconino, Prescott, and Kaibab National Forests, which offer extensive opportunities for hiking, backpacking, horseback riding, bicycling, camping, picnicking, boating, and fishing.

Near Montezuma Castle and Montezuma Well are Red Rock State Park and Fort Verde State Historical Park. Red Rock State Park provides self-guided and ranger-led interpretive walks, video and slide programs on the natural resources in the

valley, hiking trails, and picnic facilities. Visitation to the Red Rock was 66,442 in 1995-1996 and 76,393 in 2000-2001, a 15% increase (Northern Arizona University 2002).

Fort Verde State Historical Park has the best preserved example of an Indian Wars period fort in Arizona. Three historic house museums are available to visitors, including the Commanding Officer's Quarters, Bachelors' Quarters, and Doctor's Quarters on Officer's row, all furnished in the 1880s period. The park has living history programs and picnic facilities. Visitation in 1995-96 was 31,181 and 21,450 in 2000-2001, a 31.2% decrease in visitation (Northern Arizona University 2002).

Directly adjacent to Tuzigoot is Peck's Lake, an old oxbow lake of the Verde River just north of Tavaschi Marsh. It is closed to public use but provides a scenic backdrop for the monument.

Also directly adjacent to Tuzigoot are Dead Horse Ranch State Park and the Verde River Greenway, managed as a special unit of Dead Horse Ranch State Park. Dead Horse Ranch State Park offers campgrounds, restrooms, showers, picnic sites, group use areas, fishing lagoons, river access, riverfront trails, and interpretive and environmental education programs. Visitation to the state park was 74,503 in 1995-1996 and 103,089 in 2000-2001, a 38.4% increase in visitors (Northern Arizona University 2002).

The Verde River Greenway, along a segment of the nearly 180-mile long Verde River, crosses into Tuzigoot's legislated boundary. The Greenway encompasses nearly 480 acres and is six miles long (Arizona State Parks 2004). The Verde River Greenway Management Plan calls for Tuzigoot to be integrated in to the Verde River Greenway through use of specialized Verde River Greenway family of signs (Arizona State Parks 1992). The Verde River Greenway Management Plan also suggests that interpretation at the

monument should be expanded to explain how the Verde River riparian corridor supported the development of the settlement at Tuzigoot. The plan also calls for an interpretive corridor that would link sites such as Tavaschi Marsh and Tuzigoot National Monument. It also proposes an agricultural exhibit that would provide an area for accurately representing the types and quantities of Native American crops, tools, irrigation, and agricultural practices. The view of the site from Tuzigoot would provide an opportunity to explain the significance of the river ecosystem and the relationship to the lands surrounding Tuzigoot.

The plan suggests a 2-mile trail system that would include natural and cultural system interpretive viewpoints and signage to link the resources. A 10-foot-wide, granular stone surfaced trail for non-motorized use traversing the length of the greenway is recommended. Loop trails off the core trail would provide access to the river, picnic areas, or interpretive sites.

Also close to Tuzigoot is Jerome State Historic Park, which showcases the Douglas Mansion, a landmark in Jerome since 1916, when James S. Douglas built it on the hill just above his Little Daisy Mine. This former home is now a museum devoted to history of the Jerome area and the Douglas family. The museum features exhibits of photographs, artifacts, and min-

erals in addition to a video presentation and a three-dimensional model of the town with its underground mines. There are more displays outside along with a picnic area offering a beautiful panoramic view of the Verde Valley. Visitation in 1995-1996 was 87,749 and 53,128 in 2000-2001, a 39.5% decrease in visitation (Northern Arizona University 2002).

A future opportunity for visitors to the Verde Valley area will be the Sinaguan Circle tour. As envisioned, the Sinaguan Circle effort would consist of a partnership, including the National Park Service, United States Forest Service, Arizona State Parks, Arizona Conservancy, and local organizations, to promote and encourage protection, preservation, interpretation, and linkage of significant Sinaguan sites in the Verde Valley via a coordinated automobile driving tour. Interpretive media and trails would be developed at significant sites along the tour route.

Currently, several events draw people to the Verde Valley area. One of the most popular is the Verde River Days, an annual event sponsored by the local communities and businesses that features river-related activities, demonstrations, and exhibits for children and adults. NPS staff participates in the event, highlighting the resources of the monuments.

Other parks, monuments, and recreation areas in the region are identified in table 8.

TABLE 8: REGIONAL PARKS, MONUMENTS, AND RECREATIONAL AREAS

Park or Recreation Area	Mileage to Montezuma Castle
Wupatki National Monument	89 miles north
Sunset Crater Volcano National Monument	74 miles north
Walnut Canyon National Monument:	55 miles north
Grand Canyon National Park (South Rim)	135 miles northwest
Grand Canyon National Park (North Rim)	181 miles northwest
Petrified Forest National Park	123 miles east
Beaver Creek Recreation Area	15 miles north
Mingus Mountain Recreation Area	41 miles west
Oak Creek Canyon Natural Area	39 miles north

MONUMENT OPERATIONS

Montezuma Castle National Monument (including Montezuma Well) and Tuzigoot National Monument are NPS units in central Arizona. The monuments are within a 30-minute drive of each other.

Montezuma Castle National Monument is approximately 3 miles east of I-17 exit 289. The Castle is not open to the public, but the trail runs below the Castle and offers many panoramic viewpoints. The Castle has a visitor center and a museum that include exhibits and artifacts depicting the lifestyle, history, and culture of the Sinaguan Indians who built Montezuma Castle. The visitor center also contains a bookstore operated by Western National Parks Association, a non-profit organization that partners with the National Park Service.

This site also contains restrooms and a picnic area. A parking facility for approximately 65 cars and three oversized vehicles and recreational vehicles is near the visitor center. Additional infrastructure includes a water tank in the central portion of the monument and a sewage treatment facility on the south side of the monument. Several administrative buildings housing ranger operations are south of the parking facility.

Rangers provide interpretive programs at the Castle twice each day, in late morning and early afternoon. The programs cover topics ranging from the history and culture of the Sinagua people to the geology and wildlife of the Verde Valley. A \$5.00 entrance fee is charged for adults 16 years of age and older. Children under 16 years of age are free. The entrance fee is good for seven days. The visitor center and parts of the trail are wheelchair accessible.

Montezuma Well is approximately 4 miles east of I-17 exit 293. The Well contains a picnic area, restrooms, and hiking trails. A visitor contact station is also provided at Montezuma Well, consisting of a small

prefabricated concrete building where information is provided through a sliding window. Bulletin boards at Montezuma Well inform and orient visitors. A parking facility near the visitor contact station accommodates approximately 10 cars. Several administrative buildings are east of the Back Ranch area. These serve ranger operations, maintenance, and monument housing. Rangers provide interpretive programs at Montezuma Well once each day. There is no fee to enter Montezuma Well. The trail to the well is not accessible for wheelchairs.

Tuzigoot National Monument is approximately 20 miles northwest of I-17 exit 287. Tuzigoot contains a visitor center and museum with one of the finest collections of Sinaguan artifacts. This site also contains a nature trail and restrooms but no picnic facilities. An administrative building is on the site. A parking facility accommodates approximately 40 cars and approximately six buses or recreational vehicles. A \$5.00 entrance fee is charged for adults 16 years of age and older. Children under 16 years of age are free. The entrance fee is good for seven days. A combination Montezuma Castle / Tuzigoot pass is available for \$8.00. The visitor center and museum are wheelchair accessible, but the trail to the 110-room pueblo is too steep for wheelchairs. The nature trail is also wheelchair accessible, but has some elevation gain.

The monument occasionally hosts special programs or events. During 2007, the monument hosted two special events during the last week of April (National Park Week). One event was a presentation on stargazing in our national parks and the other event was a craft fair in association with Junior Ranger Day. Activities associated with these special events occurred at each of the monument sites.

The NPS units are managed collectively under a single administrative organization.

Currently, the monument employs 24 full time equivalent employees. Fifteen are permanent, full-time employees and nine are temporary employees. Two permanent, full-time employees have been requested in the proposed budget but not yet approved or hired. Table 9 describes the current organization of the monuments' staff.

TABLE 9: FULL-TIME EQUIVALENT EMPLOYEES FOR MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

Division	Permanent	Temporary
Administration	2	2
Facilities management	4	2
Resource management	3 ^{a/}	3
Visitor and resource protection	7 ^{a/}	2
Total	15	9

^{a/} A permanent employee has been requested, but not hired.

The Administration Division includes the superintendent and support personnel, who are responsible for the operation of the monuments. The Administration Division is at monument headquarters in downtown Camp Verde, in a leased office building outside the monument boundaries.

The Facilities Management Division includes the facility manager and maintenance workers, who are responsible for all maintenance activities at all monument sites. The Facilities Management Division is based on tribal-owned property approximately 2 miles from Montezuma Castle.

The Resources Management Division includes a historical architect, who acts as division manager, and support personnel consisting of scientists and laborers. This division is responsible for protecting the historic and natural resources of the monuments. The Resources Management

Division is based inside the monument at Tuzigoot.

The Visitor and Resource Protection Division includes the chief ranger, a supervisory ranger, and rangers assigned to either law enforcement / resource protection or to interpretation. The supervisory ranger is responsible for interpretation, and the chief ranger is responsible for law enforcement and resource protection. Currently, about half of the rangers are assigned to interpretation and half are assigned to law enforcement / resource protection. The rangers are distributed between the monument sites, but the higher visitation at Montezuma Castle dictates an increased ranger presence there.

The monuments also use volunteers, primarily for assistance with interpretation. Currently, the monuments have approximately 12 to 18 volunteers on duty at any one time. During 2007, the volunteers logged approximately 3,300 hours at the monuments.

All sites of the monuments are open all days during the year except Christmas. The operating hours are from 8:00 AM to 5:00 PM, with summer hours extended to 6:00 PM between June and August.

Other federal agencies and state universities regularly conduct research at the monuments. There are currently 18 research sites and 26 archeological sites at the monuments under study. Research includes such diverse topics as water resources, rattlesnakes, birds, turtles, and mountain lions.

The base operating budget at Montezuma Castle and Tuzigoot national monuments has been between \$1.0 million to \$1.2 million from fiscal years 2001 through 2007. An increase to \$1.4 million was requested for the next fiscal year. This budget primarily funds employee salaries at the monuments. In addition, 80% of the fees collected at the monuments are returned to the monuments. In 2007, the approximately \$986,000 returned to the monuments funded the fee collection program

as well as interpretive, maintenance, restoration, and preservation projects. While most of the base operating budget is used for salaries, the National Park Service spends approximately \$206,000 annually for utilities, services and travel, rental and

lease payments for the vehicle fleet, supplies, and small equipment items. In addition, the General Services Administration pays approximately \$90,000 annually for offsite leases on headquarters offices and monument maintenance facilities.

SOCIOECONOMICS

Montezuma Castle and Tuzigoot national monuments are in the northeastern corner of Yavapai County in central Arizona, in an area commonly known as the Verde Valley.

Private lands in the valley are bordered to the north and east by the 1.8 million acre Coconino National Forest and to the south and west by the Verde Ranger District of the 1.2 million acre Prescott National Forest. The region hosts six designated wilderness areas. Together, the many aquatic and terrestrial habitats in the region support an abundant and rich range of avian, fish, vegetative, and terrestrial species.

The Verde Valley offers outstanding scenic, historical, and cultural resources.

Among these are red rock canyons and monolithic rock formations, the vestiges of the region's mining history, and the area's treasured Native American heritage and culture, extending from ancient times to the present. The Yavapai-Apache Reservation is in the Verde Valley, a portion of which is west of Montezuma Castle National Monument. For many years, the region's resources were exported, either as commodities like the copper and gold produced in local mines or through pictures and the film-making industry. Building on the world-renowned reputation of Sedona, those and other resources are now important amenities attracting new residents and tourists. The Verde Valley is experiencing an extended period of new development and of population and economic growth.

Montezuma Castle National Monument was established in 1906, predating the establishment of the National Park Service. Tuzigoot National Monument was established in 1939, and Montezuma Well was added as a detached site of Montezuma Castle National Monument in 1943. Prior to the advent of commercial air travel, the seasonal winter-migration of "snowbirds"

to the south, and improved highway access, the area and these two NPS units were primarily regional attractions. Annual visitation at Tuzigoot National Monument did not exceed 25,000 until 1952. That same year, annual visitation first topped 50,000 at Montezuma Castle National Monument.

Visitation continued to increase into the 1990s, in part because of the improved highway accessibility afforded by the completion of I-17 through the region. Segments of that highway incorporated portions of previously existing U.S. highways and thus were carrying traffic in the late 1950s and through the 1960s. Construction of new segments of I-17 through the Verde Valley was completed in 1976, and the completed I-17 was opened to travel from end to end in November 1987. The construction and completion of I-17 provided an important north-south link for commercial travel, enhanced access to Grand Canyon National Park, and factored into the growth and development of both the Prescott metropolitan area and the Verde Valley. Yavapai County's population increased from 37,005 in 1970 to 107,717 in 1990, a strong 5.5% compounded annual growth rate.

Set against this dynamic backdrop, visitation at the monuments continued to climb, albeit at a modest pace, until the mid-1990s. Specific causes for the declines thereafter are not known, but likely contributing factors include the following:

- Institution of entrance fees at the main site of the Montezuma Castle and Tuzigoot national monuments in 1996 under the recreational fee demonstration program;
- Opening and subsequent expansion of the Cliff Castle Casino at the primary interstate interchange (Middle Verde) accessing Montezuma Castle National Monument;

- Development of an expanded range of convenience food and automotive services at both the Middle Verde and Camp Verde interchanges;
- Expansion of the array of private recreation and other opportunities within the valley, which compete with the national monuments for visitor's time and attention within a time-constrained environment;
- Indirect impacts linked to declining visitation at Grand Canyon National Park, for which I-17 serves as a major access route; and
- Changing household demographics and other factors affecting people's recreation and travel patterns.

The convergence of these factors is affecting the established economic and social linkages between the three sites, the local economy and the gateway communities.

REGIONAL ECONOMY

Beginning with the settlement by the Hohokam, agriculture has been a part of the region's economic history. Early agricultural production of crops was for subsistence, whereas livestock ranching became more predominant in contemporary times. Around the turn of the 20th century, copper and gold mining became a driving economic force in the region, spawning development of several communities in the region and the Verde Canyon Railroad. Active mining has largely disappeared from the valley, which is now well into the transition from a commodity-based economy to one based heavily on trade, consumer and professional services, and construction.

Recreation and tourism provide a major source of economic stimulus to the re-

gional economy. In addition to the two national monuments, other regional recreation and tourism attractions include the following:

- Five state parks hosting 476,000 total visitors in 2003;
- Coconino and Prescott National Forests offering numerous hiking and biking trails, off-highway vehicle use areas, campgrounds, and other recreation opportunities;
- Cliff Castle Casino/Lodge, consistently rated as among the best casinos in Arizona, along with other traveler-oriented development on the Yavapai-Apache reservation;
- Verde Canyon Railroad/Excursion Train carrying 80,000 passengers annually; and
- Page Springs State Fish Hatchery and numerous other public and private cultural and heritage sites.

These opportunities combine to offer visitors the option to spend just a few hours or several weeks in the area. About 60% of visitors to Montezuma Castle or Tuzigoot national monuments during 2003-2004 reported spending at least one night in the area, with most reporting spending multiple nights (White and Virden 2004).

A business profile of the Verde Valley reveals the strong dominance of trade and the services in the local economy as almost three of four establishments are in those broadly defined sectors. Moreover, there are more firms in trade and the combined total of industrial firms engaged in mining, construction, manufacturing, transportation, and utilities (table 10).

TABLE 10: NUMBER OF ESTABLISHMENTS, BY INDUSTRIAL SECTOR AND COMMUNITY, 2003 ^{a/}

Industrial Sector	Camp Verde	Clarkdale	Cornville	Cottonwood	Sedona	Elsewhere ^{b/}	Total
Agriculture, forestry, and mining	21	5	7	24	26	5	88
Construction	74	15	31	123	183	24	450
Manufacturing, transportation, and utilities	47	24	11	99	171	18	370
Wholesale and retail trade	107	24	26	257	498	60	972
Financial, real estate, and other services	199	55	47	579	1,079	68	2,027
Public administration	19	4	0	19	15	4	61
Nonclassified	6	6	7	21	48	4	92
Totals	473	133	129	1,122	2,020	183	4,060

a/ Source: Dun & Bradstreet, 2003.

b/ Includes Jerome, Lake Montezuma, and Rimrock.

Sedona, Cottonwood, and Camp Verde are the primary trade and service centers in the Verde Valley. Sedona has the strongest concentration of lodging, restaurants, art galleries, and other shops catering to tourists and seasonal residents, as well as banks and other financial and professional services. Cottonwood is home to the Verde Valley Medical Center, the area's primary acute care facility, local offices of many state agencies, and numerous retail stores, service establishments, and construction trade/industrial supply firms catering largely to resident demands, although tourists are important for many restaurants, cafes, and other merchants. Camp Verde hosts highway-oriented trade and service establishments, many government offices, and essential retail stores for a growing resident population. Fort Verde State Historical Park is also in Camp Verde.

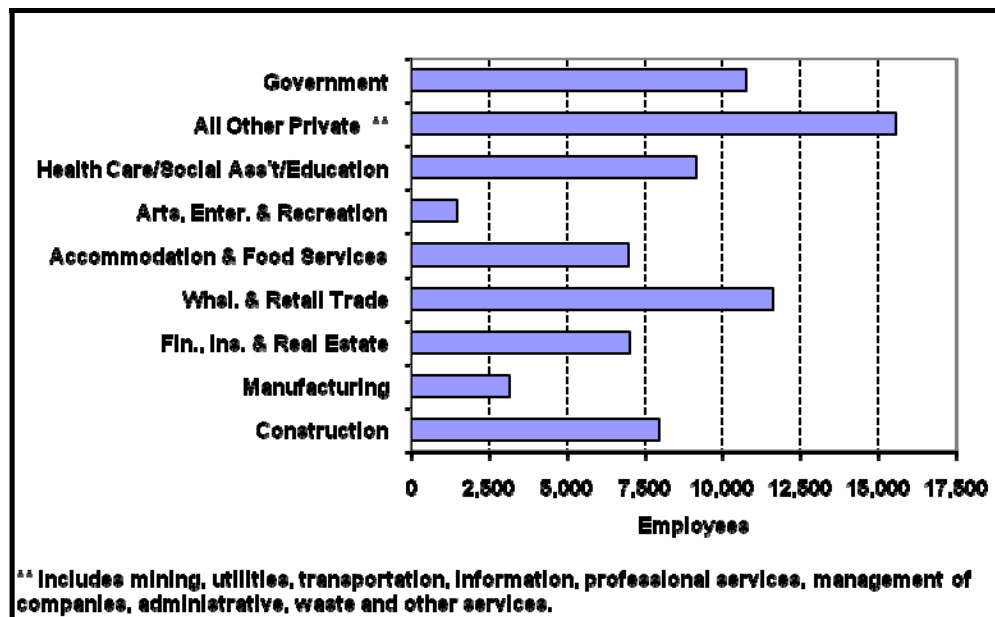
Employment

Yavapai County has experienced a sustained economic expansion for more than two decades. Total full-time and part-time

employment increased from 25,295 in 1982 to 74,441 in 2002, a net change of 49,146 jobs and a 5.5% compounded annual growth rate. Moreover, the county recorded year-over-year increases in all but one year.

Government was the single largest employment sector in 2002 with 10,744 employees (14.4% of the total), although that total was surpassed by the combined wholesale and retail sectors (11,629 employees; see figure 9). Health care, social services, and education play an important role in the local economy, with more than 9,176 jobs in 2002. Accommodations and food services and the arts, entertainment, and recreation services sectors, with their strong links to tourism, supported 6,975 and 1,477 jobs respectively. Driven by the strong economic and population expansion across the county, the finance, insurance, and real estate and construction sectors also account for large shares of the total employment, 7,127 jobs (9.4%) and 7,955 jobs (10.7%) respectively. Manufacturers in Yavapai County provided 3,170 jobs.

FIGURE 9: FULL-TIME AND PART-TIME EMPLOYMENT, YAVAPAI COUNTY, 2002



Labor Force Participation

Labor force participation among valley residents 16 years and older are lower than the statewide and national norms. Local labor force participation averages about 54.9% in the Verde Valley, ranging from 52.5% in Camp Verde to 72.2% in Jerome, compared to 61.1% for Arizona and 60.3% for the nation. The lower local rates reflect the relatively higher number of retired residents.

Unemployment

Unemployment rates in Yavapai County have historically been below the statewide average. That trend was maintained through the recessionary period of 2000 to 2002, when unemployment rates increased, and more recently as unemployment has declined (table 11). Unemployment rates within the Verde Valley at the time of the 2000 census were comparable to the countywide average. Unemployment rates within the valley tended to be slightly higher in Cottonwood and Camp Verde than in other parts of the valley.

TABLE 11: AVERAGE ANNUAL UNEMPLOYMENT RATES

Area	2000	2001	2002	2003	2004 (Aug.)
Yavapai County	2.8%	3.0%	3.7%	3.3%	2.8%
Arizona	4.0%	4.7%	6.2%	5.6%	4.9%

Source: Arizona Department of Economic Security, Research Analysis, 2004.

The below-average labor force participation rates and large number of retired residents are two factors that likely contribute to the favorable unemployment conditions in the local market.

Personal Income

Total personal income growth in Yavapai County has averaged 4.3% (compounded annual growth rate) since 1999, reaching \$3.93 billion in 2002. Data from the 2000 census indicate that one-third of the total accrues to Verde Valley residents. Just over half of the 2002 total income was derived from labor earnings, including a net inflow of more than \$224 million earned by residents working outside the county, primarily individuals from the Prescott area commuting to work in the Phoenix metropolitan area. Dividends, interest, and rent added another \$1.17 billion and

\$857 million in social security, private retirement, and other current transfer receipts.

The single largest amount and share of earnings was paid by governments at all levels: \$414.3 million or 21.6%. The construction, retail trade, and health care and social assistance industries each recorded earnings in excess of \$200 million. Professional services, accommodation and food services, and manufacturing all had approximately \$100 million in labor earnings.

Per capita personal incomes among valley residents, shown in table 12, reflect the diverse range of economic, demographic, and life-stage characteristics, as well as differing community characteristics. Across the valley, per capita personal incomes are generally below the countywide and statewide norms. At \$15,072, per capita income in Camp Verde was the lowest in the valley, and nearly 26% below the statewide average of \$20,275. The highest per capita incomes were in Sedona (\$31,350) and nearby Big Park (\$30,026),

both considerably higher than the state-wide average. Median household incomes across the valley reflected similar patterns (table 12).

Income sources among residents indicate the influx of retired and semi-retired households into the valley in recent years. Except for households living in Jerome, relatively fewer households reported income from current employment than across the state or nation, with the corollary that relatively more households receive social security and retirement income. For instance, fewer than 60% of households in the Big Park census designated place had earnings from work compared to 78.7% of all households in Arizona and 80.5% of American households. Again, except for Jerome, more than 40% of local households received social security income, compared to 25.7% across the nation, and 22% to 30% of households received retirement income, compared to 8.5% across the state.

TABLE 12: PERSONAL INCOME AMONG VERDE VALLEY HOUSEHOLDS, 1999

Community	Per Capita Income	Median Household Income	Share of Households with Income from: ^{a/}		
			Work Earnings	Social Security	Retirement Income
Big Park CDP ^{b/}	\$ 30,026	\$ 38,477	59.5%	44.4%	30.4%
Camp Verde	\$ 15,072	\$ 31,868	71.4%	42.1%	29.0%
Clarkdale	\$ 18,441	\$ 34,911	66.2%	42.1%	28.7%
Cottonwood	\$ 17,518	\$ 35,075	64.9%	45.2%	22.8%
Jerome	\$ 19,967	\$ 27,857	83.8%	18.1%	8.1%
Lake Montezuma CDP	\$ 17,043	\$ 33,750	74.1%	37.2%	25.9%
Sedona	\$ 31,350	\$ 44,042	69.5%	42.9%	22.6%
Yavapai County	\$ 19,727	\$ 34,901	67.8%	40.1%	27.3%
Arizona	\$ 20,275	\$ 40,558	78.7%	27.1%	18.5%
United States	\$ 17,518	\$ 27,444	80.5%	25.7%	16.7%

a/ Shares do not add to 100% because households can have multiple sources of income.

b/ CDP is the abbreviation for census designated place, an unincorporated community that has many of the retail and service functions of a town.

Source: U.S. Census Bureau – Census 2000, 2002.

Commuting

Most of the valley's residents who work do so within the valley. More than 1,700 individuals, 7% of workers 16 years and older, worked at home. Another 42% of workers reported one-way commuting of less than 15 minutes, and 37% of workers had commuting times of between 15 and 29 minutes. Nearly 4,100 resident workers reported doing so in another county. For some, this simply involved commuting from the western part of the Sedona to the eastern part or vice versa. In other cases, it involved commuting to the Phoenix or Flagstaff metropolitan areas, facilitated by I-17.

Poverty

Relatively fewer individuals are economically impoverished in the Verde Valley than elsewhere in Yavapai County, Arizona or the nation. In 1999, approximately 6,650 individuals (11.2%) lived in poverty in the area. That compares to 13.9% of all Arizonans. However, poverty rates in Camp Verde and Cottonwood, communities that are also home to many Native Americans and other non-whites, recorded higher than average rates of poverty. Improving economic and housing conditions among its members, in part through use of the proceeds of the Cliff Casino, is one of the major goals for the Yavapai-Apache tribe.

POPULATION AND DEMOGRAPHICS

Population

About 59,200 year-round residents lived in the Verde Valley in 2000. This included 55,900 inhabitants in Yavapai County and 3,300 residents in and near Sedona in Coconino County. The total represents an increase of 19,854 residents or 51% over the 1990 population of 39,307.

Population centers in the valley include the communities of Sedona (10,192), Cottonwood (9,197), Camp Verde (9,451), Clarkdale (3,422), and the unincorporated

communities of Cottonwood/Verde Village (10,610), Big Park (5,245) and Lake Montezuma (3,344). The historic town of Jerome, once boasting a population of 15,000, registered a population of 329. Another 16,600 residents lived in unincorporated areas of the valley, though some of those areas have since been annexed to a municipality.

Age and Average Household Size

Residents of the Verde Valley are generally older, with many households having no children. Across the Verde Valley, 17% of residents were under 15 years of age in 1990, and nearly 23% were 65 and over. The comparable shares for Arizona were 22.5% and 13%, respectively. The median ages of residents in the valley range from 41.0 years in Cottonwood to 55.5 in the Big Park census designated place, with a median of about 45 years across the entire valley. By comparison, the median age of all Arizonans was 34.2 years in 1990.

With relatively fewer children, the average household size in the valley is smaller than across the state and nation. The average household sizes range from 1.81 persons in Jerome to 2.52 persons in Camp Verde, with an overall average of about 2.32 persons. Statewide, the average household size was 2.64 individuals.

Race and Hispanic Origin

The racial composition among valley residents is predominately white (90%), compared to 77.9% white Arizona. Native Americans, mostly from the Yavapai-Apache Nation, whose reservation is near Camp Verde, account for 2.5% of local residents. Native Americans account for 5.7% of the statewide population. Individuals of other single races or those reporting two or more races account for the remaining 7.5% of the local population. People of Hispanic or Latino origin represented 11.2% of the population, less than half the statewide value of 25.3%.

Migration

Another indication of the dynamic demographic and social changes in the Verde Valley is that in 2000, about a third of residents age 5 or older had moved there in or since 1995. Of those, about 40% had relocated from elsewhere in Arizona, 57% from other (mostly western) states, and 3% had previously lived in a foreign country or one of the U.S. island territories.

Projected Long-term Population Growth

The Yavapai County General Plan (Yavapai County 2003) identifies two major growth areas, including the “Verde Valley Area,” which includes both monuments. Tourism is a major factor in the Verde Valley’s economy.

The area’s recent, strong population growth is expected to continue. Population projections for Yavapai County include a 59% population increase between 2000 and 2020, with a population of 240,849 projected for 2020 (Arizona Department of Economic Security 1997).

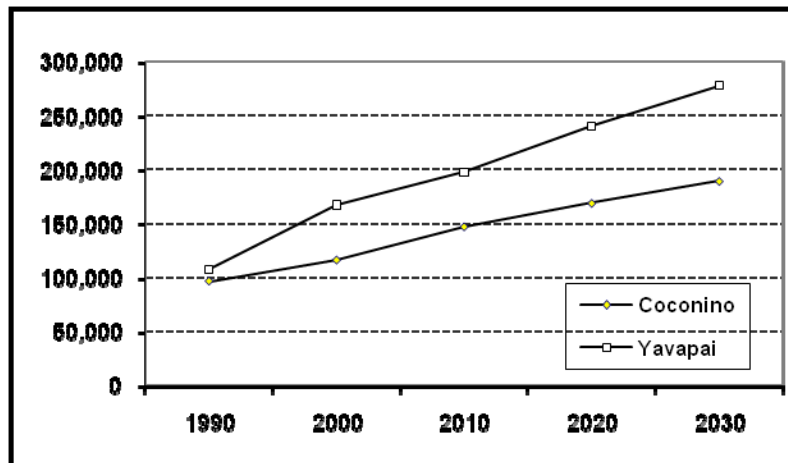
As shown in figure 10, the Arizona Department of Economic Security projects long-term growth of about 1.7% compounded annually in the region through 2030, with Coconino County’s population approaching 190,000 by 2030, and Yavapai County’s population reaching 278,400 (Arizona Department of Economic Security 1990).

Strong growth is also expected in the Verde Valley, with a projected population of about 95,000 year-round residents in 2030. Most growth will occur in the Yavapai County area because of limited land availability and development constraints around Sedona in Coconino County. Camp Verde and Sedona both have projected 2030 populations of about 16,500, with more than 35,000 residents around Cottonwood / Clarkdale / Verde Village.

Housing

There were 28,683 dwelling units in the Verde Valley at the time of 2000 census. Of those, 88% were occupied, and 3,360 (12%) were vacant. Included in the latter category were nearly 1,500 units including second homes and timeshare units for seasonal, recreational, or occasional use.

FIGURE 10: POPULATION FORECASTS TO 2030, COCONINO AND YAVAPAI COUNTIES



Utilization characteristics of housing units are not available, but if as elsewhere in Arizona, they are most frequently used during the winter (that is, New Year's to Easter). Their peak use would coincide with the peak visitation period for the national monuments.

The Verde Valley is growing rapidly, and more than 5,500 dwelling units, about one in five of all homes in the valley, were built between 1995 and March 2000. Another 1,331 homes were completed in the 15 months immediately preceding the 2000 census. Residential construction was particularly strong in Cottonwood, Sedona, and the Big Park area.

Except for Sedona and the Big Park area, which respectively had median home values of \$253,700 and \$224,800 in 1999, housing was relatively affordable in the valley. Median values in Cottonwood (\$106,800), Camp Verde (\$129,600), and Clarkdale (\$132,100) all were within 10% of the statewide average of \$121,300.

The pace of new construction has continued, as the county and local municipalities have issued building permits for another 4,500 units since 2000. The rapid pace of residential construction and the accompanying commercial and industrial development, although generally removed from the immediate vicinity of the three sites, is increasingly apparent along the primary highway access roads and routes to Montezuma Castle and Tuzigoot national monuments. The encroaching development is forever altering the sense of remoteness that visitors to these sites formerly experienced, along with the appreciation and understanding of their historical setting.

Adjacent Land Use

The Verde Valley is one of the fastest growing areas in Arizona. Historically, land uses in Yavapai County were largely ranching, agriculture and mining. During the past 30 years of rapid population growth, much of the ranching and agricultural uses have developed into expansions

of municipalities. Residential development has also happened in many unincorporated portions of the county near established urbanizing areas where major infrastructure, such as county highways, enhance development. As population continues to grow throughout the Verde Valley, demand for additional housing units will continue, with population increases of up to 60% forecasted. Increasing development on lands adjacent to and surrounding the monument continues to result in direct and indirect impacts on the monuments. Adverse impacts to resources result from farming, feral animals, woodcutting, freeway construction, residential and subdivision construction, water demands, and pesticide and fertilizer drainage into water supplies. Development in the valley has resulted in visual intrusions on the monument's cultural and natural setting.

ECONOMIC CONTRIBUTIONS OF THE NATIONAL MONUMENTS TO THE LOCAL ECONOMY

Visitors to Montezuma Castle and Tuzigoot national monuments gain insights into the ancient Sinaguan culture that once thrived in the area. During their time in the area, they can also learn about the more recent and contemporary endeavors of the Yavapai-Apache and about the mining and agricultural industries. At the same time, their spending on consumer goods and services and local expenditures associated with the operations of the national monuments support employment, spawn personal and business income in the valley, and generate tax revenues that help support government and public services. The economic contributions of those linkages are addressed in this section.

Visitor Spending

Annual visitation to Montezuma Castle and Tuzigoot national monuments totaled 752,240 in 2003. This year is used to provide consistency with the available visitor spending data. As documented in the visitor survey, many of the visitors saw two or

all three of the sites during their stay. The typical visit was relatively short, such that many of the multiple visits likely occurred during the same day. Adjustments made to eliminate double counting when estimating the economic impacts, predicated on a visitor's typical daily spending, reduced the total number of individual visitors to 600,000. Accounting for the different user segments, for instance, day visitors versus those spending the night locally, results in 149,729 visitor party-days. (Party-days are a measure of activity used to account for varying lengths of stays and differences in spending patterns among visitors. The conversion from visits to party-days is needed because expenditure data are typically collected and reported on "per day" or "per trip" basis, with lodging or other overnight accommodations one of the key spending categories.)

Average spending per party-night is estimated at \$96.85, yielding total estimated annual visitor spending associated with the Montezuma Castle and Tuzigoot national monuments of \$14.50 million (table 13). The bulk of the total, \$8.05 million (55%), is by visitors staying overnight in area motels, bed and breakfasts, and other lodging accommodations.

Non-local day users account for the second largest share of the spending, \$2.79 million (19%).

Of the total spending, \$11.78 million is captured within the region, with \$2.72 million leaving the region to cover the cost of goods sold. Receipts garnered by local motels, resorts, RV parks, and other overnight accommodations account for \$4.48 million (38%). Restaurants, bars, coffee shops, and other such establishments gain \$3.33 million in annual sales attributed to monument visitors. Retail merchants realized \$1.6 million, the Cliff Castle Casino \$1.0 million, and other attractions and amusements \$830,000 in annual receipts from visitors to Montezuma Castle and Tuzigoot national monuments.

Locally captured visitor spending includes purchases of books, maps, CDs, DVDs, tapes, and other items sold by the Western National Parks Association at gift shops in the Montezuma Castle and Tuzigoot visitor centers. Annual gross sales are about \$570,000. About \$35,000 of that total is transferred to the monument as a concession/lease fee for the space used by the retail operation (Fistler pers. comm. 2005).

TABLE 13: ANNUAL VISITOR SPENDING IN THE VERDE VALLEY BY VISITORS TO MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

Category	USER SEGMENT					
	Local Day User	Non-local Day User	Motels	Tour Bus Visitors	Camp-Out	Visiting Friends or Relatives
Spending per party-night	\$41.39	\$58.11	\$179.12	\$73.12	\$93.87	\$61.11
Party nights	<u>14,040</u>	<u>47,960</u>	<u>44,929</u>	<u>15,444</u>	<u>8,673</u>	<u>18,683</u>
Total spending (\$000s)	\$581.1	\$2,786.9	\$8,047.7	\$1,129.3	\$814.2	\$1,141.7
Total spending – all users (\$1,000s)	\$14,500.9					
Segment share of total	4%	19%	55%	8%	6%	8%

Source: Stynes et al. 2000 (Money Generation Model Version 2).

The local visitor spending associated with the national monuments supports 291 jobs across the region, generating \$3.97 million in annual personal income and \$6.02 million in value added within the Verde Valley. Included in the above are eight jobs with the Western National Parks Association (Fistler pers. comm. 2005). The sums are in addition to the NPS jobs at the two units and those jobs supported indirectly by the payroll, operating expenses, and construction contracts issued by the units.

The recirculation of money within the local economy as employees, merchants, property owners, and public sector employees purchase goods and service locally amplifies the magnitude of the direct economic stimulus generated by visitors. This “multiplier” effect results in additional job creation and income generation. The secondary effects of visitor spending include \$3.84 million in direct sales, 51 jobs, \$1.29 million in personal income, and \$2.38 million in value added (table 14). The multipliers range from 1.17 for jobs to 1.40 for direct sales.

Part of the entrance fees collected by the National Park Service from visitors accrues directly to the Montezuma Castle and Tuzigoot national monuments. This amount is discussed below and, to avoid double counting, is excluded from the preceding estimates of the economic impact of visitor spending.

Monument Operations

The annual budget for NPS operations at Montezuma Castle and Tuzigoot national monuments represents direct income to the Verde Valley economy. Spending of wage and salary income by NPS employees stimulates induced effects in the region, and spending by the National Park Service on utilities, supplies, and services

support additional sales, jobs, and income. The effects of NPS operations are an addition to the effect of visitor spending associated with the national monuments.

Fiscal year 2004 is the base year used for analyzing the monuments’ economic contribution, allowing correlation with the 2004 visitor survey. Fiscal year 2007 operating budgets and staffing are presented in the Monument Operations section.

In fiscal year 2004, NPS spending, including additional amounts for projects that were part of ongoing operations, was a little more than \$1.4 million.

NPS spending in fiscal year 2004 are estimated to have supported 38 jobs in the Verde Valley region, including full-time equivalent jobs at Montezuma Castle and Tuzigoot national monuments, and an additional 14 jobs generated by the spending of NPS employees and NPS direct local spending. NPS operations generated \$1.5 million of personal income in 2004, including \$1.2 million in payroll, \$867,000 in direct sales, and \$1.8 million in value added, an amount that includes the \$1.5 million in personal income just noted (table 15). These amounts are all in addition to the effect of local visitor spending associated with the national monuments.

The estimates of total economic impact in table 16 rely on assumptions about where NPS payroll is spent and where other NPS purchases are made. The assumptions come from the NPS’ Money Generation Model version two (Stynes et al. 2000). For regions generally comparable to the Verde Valley, the model assumes that the disposable share of household income is spent locally and that NPS purchases are mostly made outside the region with the exception of water service and some supplies and equipment.

TABLE 14: DIRECT ECONOMIC IMPACTS OF VISITOR SPENDING IN THE VERDE VALLEY, 2003

CATEGORY	ECONOMIC PARAMETER			
	Direct Sales (\$1,000s)	Local Jobs	Personal Income (\$1,000s)	Value Added (\$1,000s)
Direct effects	\$11,775	291	\$3,971	\$6,023
Secondary effects	<u>\$3,837</u>	<u>51</u>	<u>\$1,289</u>	<u>\$2,377</u>
Total impacts	\$15,612	342	\$5,260	\$8,400
Multipliers (total/direct)	1.33	1.17	1.32	1.40

Source: Stynes et al. 2000 (Money Generation Model Version 2).

TABLE 15: DIRECT ECONOMIC IMPACTS IN THE VERDE VALLEY OF THE MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS OPERATIONS, FISCAL YEAR 2004

CATEGORY	ECONOMIC PARAMETER			
	Direct Sales (\$1,000s)	Local Jobs	Personal Income (\$1,000s)	Value Added (\$1,000s)
Direct Effects	\$26 ^{a/}	24	\$1,238	\$1,238
Secondary Effects	<u>\$842 ^{b/}</u>	<u>14</u>	<u>\$308</u>	<u>\$521</u>
Total Impacts	\$868	38	\$1,546	\$1,759
Multipliers (Total/Direct)	NA ^{c/}	1.58	1.25	1.41

Notes:

a/ Estimated local purchases by the National Park Service for utilities, supplies, and services.

b/ Includes the induced and indirect effects of monument purchases and employee spending of income.

c/ NA = not applicable. A multiplier for direct sales was not calculated because the amounts in this column are not consistent with those in the other three columns of the table because the direct effect of employee spending has not been estimated explicitly.

Source: Stynes et al. 2000 (Money Generation Model Version 2).

TABLE 16: TOTAL ECONOMIC IMPACTS IN THE VERDE VALLEY OF THE MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS, 2003

CATEGORY	ECONOMIC PARAMETER			
	Direct Sales (\$1,000s)	Local Jobs	Personal Income (\$1,000s)	Value Added (\$1,000s)
Visitor spending	\$15,612	342	\$5,260	\$8,400
NPS monument operations	<u>\$867</u>	<u>38</u>	<u>\$1,546</u>	<u>\$1,759</u>
Total impacts	\$16,480	380	\$6,806	\$10,159

Source: Stynes et al. 2000 (Money Generation Model Version 2).

Visitor entrance fees were excluded from the analysis of visitor spending impacts. However, 80% of this type of revenue is returned to the local NPS unit under the National Park Service's Recreation Fee Demonstration Fund program to fund resource protection, enhancement, and capital facility projects. The program has yielded about \$720,000 a year (80% of \$900,000) for Montezuma Castle and Tuzigoot. A portion of these funds has been used to offset the cost of collections, with the remainder dedicated to financing completed, ongoing or planned capital improvement and resource restoration projects at the two units.

Total Economic Contributions

The total economic contribution of Montezuma Castle and Tuzigoot national monuments is 380 jobs, nearly \$16.5 million in sales, \$6.8 million in personal income, and almost \$10.2 million in value added (table 16).

This is a small but valuable contribution to the regional economy. The 380 jobs generated by the combination of visitors and NPS employment and spending are about 0.5% of total employment in Yavapai County and a larger percentage of total employment in the Verde Valley. Similarly, \$6.8 million in personal income is about 0.2% of total personal income in Yavapai County and is a larger share of total personal income in the Verde Valley. Note that a percentage share for the Verde Valley cannot be quantified because employment and personal income data are not available for the local region.

Montezuma Castle and Tuzigoot national monuments also contribute to total sales and value added in Yavapai County. The shares contributed by the monuments would be small in comparison to totals for Yavapai County. Again, the percentage share contributed by the monuments to total sales and value added in the county and in the local region cannot be quantified from the available economic information.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The National Environmental Policy Act (NEPA) requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided if a proposed action is implemented. In this case, the proposed federal action would be the adoption of a general management plan for Montezuma Castle and Tuzigoot National Monuments. The following portion of this document analyzes the environmental impacts of implementing the three alternatives on cultural resources, natural resources, the visitor experience, monument operations, and socioeconomics. The analysis is the basis for comparing the beneficial and adverse effects of implementing the alternatives.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions are analyzed in general, qualitative terms. Thus, this environmental assessment should be considered a programmatic analysis. If and when site-specific developments or other actions are proposed for implementation subsequent to this general management plan, appropriate detailed environmental and cultural compliance documentation will be prepared in accord with the National Environmental Policy Act and National Historic Preservation Act requirements.

This chapter begins with a description of the methods and assumptions used for each topic. Impact analysis discussions are organized by alternative and then by impact topic under each alternative.

Each alternative discussion also describes cumulative impacts and presents a conclusion. At the end of each alternative is a brief discussion of unavoidable adverse impacts, irreversible and irretrievable commitments of resources, the relationship of short-term uses of the environ-

ment and the maintenance and enhancement of long-term productivity, and energy requirements and conservation potential. The impacts of each alternative are briefly summarized in table 6, at the end of Chapter 2: Alternatives, Including the Preferred Alternative.

CUMULATIVE IMPACT ANALYSIS

The Council on Environmental Quality's regulation 1508.7 describes a cumulative impact as follows:

- *Cumulative impacts* are incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Other projects, plans, and actions within Montezuma Castle and Tuzigoot national monuments, as well as local and regional projects, plans, and actions with potential to combine with the effects of the alternatives were identified to determine potential cumulative impacts. Projects were identified by discussions with the monuments, federal land managers, and representatives of county and town governments. Potential projects identified as cumulative actions included any planning or development activity that was currently being implemented or would be implemented in the reasonably foreseeable future. Impacts of past actions were also considered in the analysis.

These actions are evaluated with the impacts of each alternative to determine whether they have any cumulative effects on a particular natural, cultural, or socioeconomic resource or visitor use. Because most of these cumulative actions are in the early planning stages, the qualitative evaluation of cumulative impacts was

based on a general description of the project. See Chapter 1, Relationship to Other Planning Effort, for a description of the plans and actions considered in the analysis of the alternatives.

IMPAIRMENT OF MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS RESOURCES

In addition to determining the environmental consequences of implementing the preferred and other alternatives, *Management Policies 2006* requires analysis of potential effects to determine whether or not proposed actions would impair monument resources and values (sections 1.4.2, 1.4.4, and 1.4.5).

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 monument resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on monument resources and values. However, the laws do give the National Park Service the management discretion to allow impacts on monument resources and values when necessary and appropriate to fulfill the purposes of the monument, 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 a monument, that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of monument resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values

(*Management Policies 2006*, section 1.4.5). An impact on any monument resource or value may constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the monument;
- Key to the natural or cultural integrity of the monument or to opportunities for enjoyment of the monument; or
- Identified as a goal in the monument's general management plan or other relevant NPS planning documents.

Impairment may result from NPS actions in managing the monument, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the monument. A determination on impairment is made in the "Environmental Consequences" chapter in the conclusion section for each required impact topic related to the monument's resources and values.

In analyzing impairments in the National Environmental Policy Act analysis for this project, the National Park Service takes into account the fact that if impairment were likely to occur, such impacts would be considered to be major or significant under the Council on Environmental Quality regulations. This is because the context and intensity of the impact would be sufficient to render what would normally be a minor or moderate impact to be major or significant. An evaluation of impairment is not required for some impact topics, including visitor experience (unless the impact is resource based), transportation, NPS operations, or socioeconomics.

UNACCEPTABLE IMPACTS

The impact threshold at which impairment occurs is not always readily apparent. Therefore, the National Park Service will apply a standard that offers greater

assurance that impairment will not occur by avoiding impacts that it determines to be unacceptable. These impacts fall short of impairment but are still not acceptable within a particular park's environment. Park managers must evaluate existing or proposed uses and determine whether the associated impacts on monument resources and values are acceptable.

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean that the impact is unacceptable or that a particular use must be disallowed. Therefore, for these policies, unacceptable impacts are impacts that, individually or cumulatively, would

- Be inconsistent with a park's purposes or values or
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process or
- Create an unsafe or unhealthful environment for visitors or employees or
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values or

- Unreasonably interfere with
 - Park programs or activities or
 - An appropriate use or
 - The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park, or
 - NPS concessioner or contractor operations or services.

In accordance with *Management Policies 2006*, park managers must not allow uses that would cause unacceptable impacts to park resources. To determine if unacceptable impact could occur to the resources and values of Montezuma Castle National Monument or Tuzigoot National Monument, the impacts of proposed actions in this general management plan and environmental assessment were evaluated based on the above criteria. A determination on unacceptable impacts is made in the Conclusion section for each of the resource topics carried forward in this chapter.

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS

The planning team based the impact analysis and the conclusions in this chapter largely on the review of existing literature and studies, information provided by experts in the National Park Service and other agencies, and monument staff insights and professional judgment. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed assuming that mitigating measures have been implemented to minimize or avoid impacts. If the mitigating measures described in Chapter 2: Alternatives Including the Preferred Alternative are not applied, the potential for resource impacts and the magnitude of those impacts would increase.

Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making presents an approach for identifying the duration (short- or long-term), type (adverse or beneficial), and intensity or magnitude (negligible, minor, moderate, or major) of the impact(s), and that approach has been used in this document. Where duration is not noted in the impact analysis, it is considered long-term. Direct and indirect effects caused by an action were considered in the analysis. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable.

The impact analyses for the no-action alternative compare resource conditions in the year 2021 to existing conditions in 2006, assuming continuation of current management direction. The impact analysis for the action alternatives (the preferred alternative and alternative C) compares the action alternatives in the year 2021 to the no-action alternative in the year 2021. Said differently, the impacts of the action alternatives describe the *differ-*

ence between implementing the no-action alternative and implementing the action alternatives. To understand a complete "picture" of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur under the no-action alternative.

CULTURAL RESOURCES

Cultural Resources Listed, or Eligible to Be Listed, in the National Register of Historic Places

Potential impacts on cultural resources (archeological resources, prehistoric or historic structures, cultural landscapes, and traditional cultural properties) either listed in or eligible to be listed in the National Register of Historic Places were identified and evaluated in accordance with the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act (36 CFR 800, Protection of Historic Properties) by:

- Determining the area of potential effects;
- Identifying national-register-listed or eligible cultural resources in the area of potential effects;
- Applying the criteria of adverse effect to affected resources; and
- Considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of *no historic properties affected*, *adverse effect*, or *no adverse effect* must be made for affected cultural resources that are listed in, or eligible for listing in, the National Register of Historic Places. A determination of *no historic properties affected* means that either no historic properties are present or historic properties are present but the undertaking will have no effect on them (36 *Code of*

Federal Regulations 800.4 [d][1]). An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register (for example, diminishing the integrity (or the extent to which a resource retains its historic appearance) of its location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 *Code of Federal Regulations* 800.5 [a] [1]). A determination of *no adverse effect* means there is an effect, but it would not meet the criteria of an adverse effect (that is, diminish the characteristics of the cultural resource that qualify it for inclusion in the national register [36 *Code of Federal Regulations* 800.5 (b)]).

The criteria for characterizing the severity or intensity of impacts to archeological resources, prehistoric and historic structures and buildings, cultural landscapes, and traditional cultural properties that are listed in, or eligible for listing in, the National Register of Historic Places are the section 106 determinations of effect: *no historic properties affected*, *adverse effect*, or *no adverse effect*. A section 106 determination of effect is included in the conclusion section for each analysis of impacts to national register-listed or -eligible cultural resources.

Ethnographic Resources

Ethnographic resources that are not traditional cultural properties are not subject to section 106 of the National Historic Preservation Act. Potential impacts to ethnographic resources that are not traditional cultural resources are described in terms of context (Are the effects site-specific, local, or regional?), duration (Are the effects short-term [that is, lasting up to 5 years], long-term [that is, lasting 5 to 20 years], or permanent?) and intensity (Is

the degree or severity of effects negligible, minor, moderate, or major?). The definitions of impact intensity for ethnographic resources follow:

- **Negligible.** Impact(s) would be barely perceptible and would alter neither resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs.
- **Minor.** *Adverse impact(s)* would be slight but noticeable but would appreciably alter neither resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs.

Beneficial impact(s) would allow access to and/or accommodate a group's traditional practices or beliefs.

- **Moderate.** *Adverse impact(s)* would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive.

Beneficial impact(s) would facilitate traditional access and/or accommodate a group's practices or beliefs.

- **Major.** *Adverse impact(s)* would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that the survival of a group's practices and/or beliefs would be jeopardized.

Beneficial impact(s) would encourage traditional access and/or accommodate a group's practices or beliefs.

NATURAL RESOURCES

Analysis of natural resources was based on research, knowledge of monument resources, and the best professional judgment of planners, biologists, hydrologists, and botanists who have experience with similar types of projects. Information on the monuments' natural resources was gathered from several sources, including the U.S. Fish and Wildlife Service and specific resource inventories for wetlands, wildlife, water quality, fisheries, and amphibians. As appropriate, additional sources of data are identified under respective topic headings.

Where possible, map locations of sensitive resources were compared with the locations of proposed developments and modifications. Predictions about short-term and long-term site impacts were based on previous studies of visitor and facilities development impacts on natural resources. The analysis also considered sociological studies comparing the deterrent effects of signs versus ranger presence for reducing visitor impacts on sites.

Generally, for natural resources analysis, duration of impacts are considered short-term if the effects are likely to last one year or less and long-term if the potential impact would last for greater than one year.

The determination of impacts for natural resources also considered whether an action would have a beneficial or an adverse effect. Typically, beneficial effects would include those that improve the condition of a resource or enhance the environment around that resource such that its well-being was enhanced. Conversely, adverse effects on natural resources would damage conditions necessary for the resource to exist or function or would degrade the environment needed to support the resource being analyzed.

The impact definitions assume that mitigation measures are considered prior to finalizing the analyses. For this document, the planning team generally and qualita-

tively evaluated the impact intensity for natural resources, as follows:

- **Negligible.** Impacts would be at the lowest levels of detection and would have no appreciable effect on resources, values, or processes.
- **Minor.** Impacts would be perceptible but slight and localized. If mitigation were needed to offset any adverse effects, it would be relatively simple to implement and would likely be successful.
- **Moderate.** Impacts would be readily apparent and widespread, and would result in a noticeable change to resources, values or processes. Mitigating measures would probably be necessary to offset adverse effects and would likely be successful.
- **Major.** Impacts would be readily apparent and widespread, and would result in a substantial alternative or loss of resources, values, or processes. Mitigating measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.

Specific impact threshold definitions were developed and used to categorize the potential effects of the natural resource impact topics.

Floodplains

The impact assessment for floodplains is focused on natural river processes and flooding potential and frequency. Director's Order 77-2, *Floodplain Management* (NPS 2003) and the extent of alteration to natural river processes were used to define the intensity of impacts.

- **Negligible.** Impacts would occur outside the regulatory floodplain as defined by the *Floodplain Management Guideline* (100-year or 500-year floodplain, depending on the type of action), or no measurable or perceptible change in natural river processes or aquatic habitat would occur.

- **Minor.** Actions within the regulatory floodplain would potentially change river processes or aquatic habitat in a limited way or in a localized area.
- **Moderate.** Actions within the regulatory floodplain would change river processes or aquatic habitat in a substantial way or in a large area.
- **Major.** An action would permanently change a floodplain or significantly affect natural river processes or aquatic habitat.

Soils

The following impact intensities were used to evaluate the potential impacts on soils:

- **Negligible.** The impact on soils would not be measurable. Any effects on productivity or erosion potential would be slight or imperceptible.
- **Minor.** The action would change a soil's profile in a relatively small area, but it would not appreciably increase the potential for changes to soils in the surrounding area.
- **Moderate.** The action would change quantity or would alter the topsoil, biological productivity, or the potential for erosion to remove small quantities of additional soil. Changes to localized ecological processes would occur but be of limited extent.
- **Major.** The action would change the potential for erosion or would alter topsoil and biological productivity in a relatively large area. Significant ecological processes would be altered, and landscape-level changes would be expected.

Vegetation

Information on site-specific areas, such as the plateau above the cliff dwelling at Montezuma Castle or the riparian areas in each monument, were gleaned from gen-

eral documents such as the monuments' resource management plan and site-specific surveys. The following impact intensities were used to evaluate the potential impacts on vegetation:

- **Negligible.** The impact on vegetation (individual plants and/or communities) would not be measurable. The abundance or distribution of individuals would not be affected or would be slightly affected. Ecological processes and biological productivity would not be affected.
- **Minor.** The action would not necessarily decrease or increase the area's biological productivity. An action would affect the abundance or distribution of individual plants in a localized area but would not affect the viability of local or regional populations or communities.
- **Moderate.** The action would change biological productivity in a small area. An action would affect a local population sufficiently to change plant abundance or distribution, but it would not affect the viability of the regional population or communities. Changes to ecological processes would be of limited extent.
- **Major.** The action would change biological productivity in a relatively large area. The action would affect a regional or local population of a species sufficiently to change abundance or distribution to the extent that the population or communities would not be likely to return to its/their former level (adverse), or would return to a sustainable level (beneficial). Important ecological processes would be altered.

Wetlands

Wetland impacts were qualitatively assessed by evaluating the potential impacts on wetland characteristics and functions including habitat. The impacts can be expressed in terms of the potential for wet-

land size or integrity, connectivity with other water sources and its ability to provide habitat.

- **Negligible.** No measurable or perceptible changes in wetland integrity, connectivity to other water sources, or functions related to habitat would occur.
- **Minor.** The impact would be measurable or perceptible but slight. A small change in integrity or continuity could occur. However, the viability of the wetland resource would not be affected.
- **Moderate.** The impact would be sufficient to cause a measurable change in the size, integrity, or continuity of the wetland or would result in a small but permanent change in wetland acreage. Moderate impacts would also include measurable changes in habitat integrity.
- **Major.** The action would result in a measurable change in all three parameters (integrity, connectivity, or ability to provide habitat) and would be substantial and highly noticeable.

Wildlife

Impacts on wildlife are directly related to impacts on habitat. The evaluation considered whether actions would be likely to displace or disturb some or all individuals of a species in the monuments or would result in changes to habitat conditions needed for the viability of local or regional wildlife populations. Impacts associated with wildlife might include any change in roosting or foraging areas, food supply, protective cover, or the distribution or abundance of species.

- **Negligible.** The impact would not be measurable on individuals, and the local populations would not be affected.
- **Minor.** The action would affect the abundance or distribution of individual(s) in a small, localized area but would

not affect the viability of local or regional populations.

- **Moderate.** The action would affect a local population sufficiently to change a species' abundance or distribution but would not affect the viability of the regional population.
- **Major.** The action would affect a regional or local population of a species sufficiently to change its abundance or distribution to the extent that the population would not be likely to return to its former level.

Threatened and Endangered Species and Special Status Species

Through coordination with the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department, federally listed species and wildlife of special concern (state-listed species) were identified that were generally in or near the monument. Monument staff then collected more specific information, such as the absence or presence of each species within the monument boundaries. For special status species, including federally listed species, the following impact intensities were used. These definitions are consistent with the language used to determine effects on threatened and endangered species under section 7 of the Endangered Species Act.

- **Negligible (No Effect).** No listed species of concern or designated critical habitats are present; or if present, there would not be any measurable or perceptible consequences to protected individuals, populations, or critical habitat. Effects on special status species would be discountable. Negligible effect equates with a U.S. Fish and Wildlife Service "no effect" determination.
- **Minor (May Affect, Likely / Not Likely to Adversely Affect).** The alternative would affect an individual(s) of a listed species or its designated critical habitat, but the change would

be small. Minor effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.

- **Moderate (May Affect, Likely / Not Likely to Adversely Affect).** An individual or population of a listed species, or its designated critical habitat, would be noticeably affected. The effect would have some long-term consequence to the individual, population, or habitat. Moderate effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.
- **Major (May Affect, Likely/or Not Likely/ to Adversely Affect).** A population of a listed species or its designated critical habitat would be noticeably affected. The alternative could change the vitality of the population such that it could affect the continued existence of the listed species within or outside the monument. Major, adverse effect equates with a "may affect/likely to adversely affect species / adversely modify critical habitat" determination in U.S. Fish and Wildlife Service section 7 terms and in some cases could "jeopardize the continued existence of the species or the integrity of critical habitat." Major, beneficial effect equates with a "may affect / not likely to adversely affect" determination.

VISITOR USE AND EXPERIENCE

This impact analysis considers aspects of visitor use and experience at Montezuma Castle and Tuzigoot national monuments, including the effects on visitors' ability to experience the monuments' primary resources and their natural and cultural settings (including vistas, natural sounds and

smells, and wildlife); visitor access to the monument; the freedom to experience the resources at one's own pace, opportunities for recreational activities, and opportunities for people with disabilities. The analysis is based on how visitor use and experiences would change with the way management zones were applied in the alternatives. The analysis is primarily qualitative rather than quantitative, based on the conceptual nature of the alternatives.

Impacts on visitor use and experience were determined considering the best available information regarding visitor use and experience. Information on visitor use and visitor opinions was taken primarily from a survey of visitors conducted in two phases from October to November 2003 and March to May 2004 (White and Virden, 2004). This information was supplemented by data gathered during this planning process, including opinions from monument visitors and neighbors and information provided by monument staff.

Primarily, visitors expressed interest in learning more about the monuments' natural and cultural resources, including opportunities for more hands-on activities and self exploration of the monuments. Interest was also expressed regarding regional recreation linkages to other nearby public lands.

Impacts were evaluated comparatively between alternatives, using the no-action alternative as a baseline for comparison with each action alternative.

For this analysis, a short-term impact would last less than one year and would affect only one season's use by visitors. A long-term impact would last more than one year and would be more permanent in nature. Impact intensities and types for visitor experience impact topics have been defined as follows:

- **Negligible.** Visitors would likely be unaware of any effects associated with implementation of the alternative. Visitor health and safety would not be af-

affected, or effects would not be appreciable or measurable.

- **Minor.** Changes in visitor use and/or experience would be slight but detectable, would affect few visitors, and would not appreciably limit or enhance experiences identified as fundamental to the monuments' purpose and significance. Effects on visitor health and safety would be detectable but would not produce an appreciable change.
- **Moderate.** Some characteristics of visitor use and/or experience would change, and many visitors would likely be aware of the effects associated with implementation of the alternative; some changes to experiences identified as fundamental to the monuments' purpose and significance would be apparent. The effects would be readily apparent, and would result in noticeable changes in visitor health and safety. Changes in rates or severity of injury could be measured.
- **Major.** Multiple characteristics of visitor experience would change, including experiences identified as fundamental to monument purpose and significance; most visitors would be aware of the effects associated with implementation of the alternative. The effects would be readily apparent, would result in substantial changes in visitor health and safety, and could lead to visitor mortality.

MONUMENT OPERATIONS

This impact analysis considers aspects of monument operations at Montezuma Castle and Tuzigoot national monuments, including the effects of each alternative on the number of staff required to conduct operations under each alternative, modifications to monument operating procedures, additional monument facilities required to implement an alternative, the relative cost and effort to maintain additional facilities, modifications to visitor

accessibility, and changes to interpretive programs and facilities. The analysis is based on the changes in monument operations that would result from the modifications in management zones between the alternatives. The analysis is primarily qualitative rather than quantitative because of the conceptual nature of the alternatives.

For this analysis, a short-term impact would last less than one year. A long-term impact would last more than one year. Impact intensities and types of impacts for the monument operations impact topic were defined as follows:

Impacts were evaluated comparatively between alternatives, using the no-action alternative as a baseline for comparison with each action alternative:

- **Negligible.** Monument operations would not be affected, or the effect would be at or below the lower levels of detection and would not have an appreciable effect on monument operations.
- **Minor.** The effect on monument operations would be detectable, but would be of a magnitude that would not have an appreciable effect on monument operations. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.
- **Moderate.** The effect on monument operations would be readily apparent, and would result in a substantial change in monument operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- **Major.** Effects on monument operations would be readily apparent, would result in a substantial change in monument operations in a manner noticeable to staff and the public, and would be markedly different from existing operations. Mitigation measures

to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

SOCIOECONOMICS

This impact analysis considers socioeconomic in the region surrounding Montezuma Castle and Tuzigoot national monuments, including the effects of each alternative on the population of the area and the regional economy, including employment in the area. The analysis is based on the changes in regional socioeconomic conditions that would result from the modifications in management zones between the alternatives. The analysis is primarily qualitative rather than quantitative, based on the conceptual nature of the alternatives.

Impacts were evaluated comparatively between alternatives, using the no-action alternative as a baseline for comparison with each action alternative. For this analysis, a short-term impact would last less than one year. A long-term impact would last more than one year. Impact intensities and types for socioeconomic impact topics have been defined as follows:

- **Negligible.** No effects would occur or the effects to socioeconomic conditions would be below the level of detection.
- **Minor.** The effects on socioeconomic conditions would be detectable. Any effects would be small, and if mitigation were needed to offset potential adverse effects, it would be simple and successful.
- **Moderate.** The effects on socioeconomic conditions would be readily apparent. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.
- **Major.** The effects on socioeconomic conditions would be readily apparent and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive, and their success could not be guaranteed.

IMPACTS OF IMPLEMENTING ALTERNATIVE A (NO-ACTION)

CULTURAL RESOURCES

Archeological Resources

Montezuma Castle National Monument. Under alternative A, archeological resources would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. All ground-disturbing activities would be preceded by site-specific archeological surveys and, where appropriate, subsurface testing to determine the existence of archeological resources and how best to preserve them. Known archeological resources would be avoided whenever possible. Although ongoing and expanded archeological site monitoring programs would be initiated and efforts would be undertaken to minimize or mitigate potential impacts from human activities and natural causes, an unknown number of archeological sites in Montezuma Castle National Monument would likely continue to be impacted by such activities and processes.

Although the condition of archeological resources at the national monument would continue to be generally good under alternative A, some sites would likely continue to be disturbed by looting and vandalism, erosion caused by natural processes, continuing use of historic and prehistoric canals, and graffiti. With the exception of the excavated/interpreted pit house in the Montezuma Well site, which continues to be periodically impacted as a result of inadvertent visitor use, the prehistoric archeological sites in the monument would continue to experience relatively few significant adverse impacts.

The Verde Valley is one of the fastest growing areas in Arizona. Increasing development on lands adjacent to and surrounding the monument would continue to result in some minor adverse impacts to

archeological resources in and near the monument as a result of farming; feral animals; woodcutting; freeway, residential, and subdivision construction; water demands; and pesticide and fertilizer drainage into water supplies.

Anticipated increases in monument visitation and visitor access could be expected to result in increasing amounts of intentional and inadvertent disturbance to archeological resources by visitors. However, the National Park Service would continue its efforts to reduce the impacts of human activities on archeological resources by keeping much of the monument's lands off-limits to visitors, through law enforcement activities, and by educating the general public about resource significance and values as funds and personnel permit. Thus, implementation of this alternative would generally be expected to contribute to potential beneficial effects on archeological resources in the national monument.

Tuzigoot National Monument. Under alternative A, archeological resources at Tuzigoot National Monument, like those at Montezuma Castle, would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. All ground-disturbing activities would be preceded by site-specific archeological surveys and, where appropriate, subsurface testing to determine the existence of archeological resources and how best to preserve them. Known archeological resources would be avoided whenever possible. Although ongoing and expanded archeological site monitoring programs would be initiated and efforts would be undertaken to minimize or mitigate potential impacts from human activities and natural causes, an unknown number of archeological sites in Tuzigoot National

Monument would likely continue to be impacted by such activities and processes.

Although the condition of archeological resources in the national monument would continue to be generally good and prehistoric archeological sites in the monument would continue to experience relatively few significant impacts under alternative A, a few archeological sites would likely continue to be disturbed by looting and vandalism, erosion caused by natural processes, and graffiti.

Increasing development on lands in the vicinity of the monument would continue to result in impacts on archeological resources in and near the monument from farming, feral animals, woodcutting, highway and road construction, residential development and associated infrastructure, water demands, and pesticide and fertilizer use draining into water resources.

Arizona's growing popularity for permanent and seasonal residence has resulted in increased visitation to the national monument and a corresponding decrease in the capacity of the limited staff to protect the monument's archeological resources. Thus, current human impacts, such as littering, trespassing (after-hours entry and entry into closed areas), looting and vandalism, intentional pilfering, illegal hunting, rising levels of unintentional disturbance, and other unauthorized consumptive uses, would be expected to continue to a limited degree. Social trails and related erosion caused by visitors leaving established trails would continue to impact archeological resources. Stream channel alteration – down cutting or deposition of the channel, flooding, or change of flow regime – resulting from mining, diversion, vegetation changes, or other human manipulation could result in adverse impacts on archeological sites in and near the monument during future years. However, continuing NPS efforts to reduce the impacts of human activities on the national monument's archeological

resources would continue to depend on keeping much of the monument's lands off-limits to visitors, on law enforcement activities, and on educating the public about resource significance and values as funds and personnel permit. Thus, implementation of this alternative would generally be expected to contribute to potential beneficial effects on archeological resources in the national monument.

Cumulative Effects: Montezuma Castle National Monument. Prior to establishment of the national monument, an unknown number of archeological resources on lands within and surrounding the present-day monument were adversely impacted by human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include borrowing building stone from rockshelters; using caves for ranch and settlement-related operations; looting and vandalism; road and utility line construction; erosion caused by natural forces and human exploration; excavations, removal of deposits; surface collection by explorers, pioneers, investigators, and looters; historic and continuing use of prehistoric irrigation canals; and graffiti. Current and ongoing NPS activities, such as expanded archeological site monitoring programs and continuing efforts to minimize or mitigate impacts on archeological resources from human activities and natural causes, would be expected to have beneficial effects on the national monument's archeological resources.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as expansion and development of a regional trails system and Yavapai-Apache expansion of the casino resort at the nearby intersection of Interstate 17 and the monument entrance road, could potentially contribute to some negligible effects on archeological resources on lands outside, but near, the Castle site. A

pending exchange of lands along Interstate 17 between the Yavapai-Apache and the U.S. Forest Service could potentially contribute to some negligible effects on archeological resources near the Castle site because tribal authorities are considering construction of a cultural center on the land that they would obtain in the proposed exchange. Possible development of the historic Soda Springs Ranch for recreational and/or resort purposes could also have some negligible impacts on archeological resources on lands bordering the Montezuma Well site. However, the effects of these aforementioned activities on archeological resources on lands bordering the national monument would generally be at or below the lower levels of detection and thus would be almost impossible to measure.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects on any cumulative impact on archeological resources. The beneficial impacts on archeological resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Cumulative Effects: Tuzigoot National Monument. Prior to establishment of the national monument, an unknown number of archeological sites on lands within and surrounding the present-day monument were adversely impacted by human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include farming; grazing; mining; camping; hiking and exploration; hunting; looting and vandalism; poaching; off-road driving; excavations and removal of deposits by pioneers, explorers, and investigators; and surface collection by investigators and looters. Current and ongoing NPS activi-

ties, such as expanded archeological site monitoring programs and continuing efforts to minimize or mitigate impacts on archeological resources from human activities and natural causes, would be expected to have beneficial effects on the national monument's archeological resources.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as expanded development in Dead Horse Ranch State Park and development associated with the Verde River Greenway Management Plan, could potentially contribute to some negligible effects on archeological resources on lands outside, but near, Tuzigoot National Monument. However, the effects of these aforementioned activities on archeological resources on lands bordering or near the national monument would be at or below the lower levels of detection and thus would be almost impossible to measure.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects on any cumulative impact on archeological resources. The beneficial impacts on archeological resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values

whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Prehistoric and Historic Structures and Buildings

Montezuma Castle National Monument. Under alternative A, prehistoric and historic structures and buildings in Montezuma Castle National Monument would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. Prehistoric and historic structures and buildings listed in, or determined eligible for listing in, the national register would continue to be managed to preserve their documented values in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1992b) and to support NPS activities or visitor use.

Public inaccessibility to Montezuma Castle and some other prehistoric structures, such as rockshelters inside Montezuma Well, would continue to provide protection for those structures. However, historic fabric in the national monument's prehistoric and historic structures and buildings would continue to be impacted by erosion and deterioration as a result of climatic conditions and other natural processes. The location of some prehistoric structures, such as Castle A and Swallet Cave, in or near high public use areas, along with anticipated increases in visitation levels, would potentially continue to result in loss of some historic fabric as a result of inadvertent visitor use, graffiti, and looting and vandalism. Continuing use of prehistoric and historic irrigation canals and ditches for agricultural operations, as well as continuing use of the 1930s-era residences and equipment shed, the early 20th century Back cabin, and the Mission 66-era visitor center for monument residential, administrative, maintenance, and interpretive operations and programs would also potentially result in the loss of some historic fabric to those structures and buildings. Periodic high water

and flooding would potentially result in the loss of historic fabric from the Civilian Conservation Corps Revetment Wall. However, these impacts would be minimized to the extent possible by continued law enforcement activities and public education efforts as well as intensive preservation treatment, regular cyclic maintenance, and stabilization of the monument's principal prehistoric and historic structures and buildings as NPS funding and personnel permit. Thus, implementation of this alternative would potentially contribute to beneficial effects on prehistoric and historic structures and buildings in the national monument.

Tuzigoot National Monument. As described for Montezuma Castle National Monument, under alternative A prehistoric and historic structures and buildings in Tuzigoot National Monument would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. Prehistoric and historic structures and buildings listed in, or determined eligible for listing in, the national register would continue to be managed to preserve their documented values in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1992b) and to support NPS activities or visitor use.

Public accessibility to the Tuzigoot Pueblo, along with anticipated visitation increases, would continue to result in potential loss of some of the structure's historic fabric as a result of inadvertent and unintentional resource disturbance, graffiti, trespassing (after hours entry and entry into closed areas), social trailing and related erosion caused by visitors leaving established trails, and looting and vandalism. Historic fabric in the pueblo would also be potentially impacted by erosion and deterioration resulting from climatic conditions and other natural processes.

Continuing use of the 1930s-era museum and headquarters building, storage tool house, pump house, and associated retaining wall for monument administrative, maintenance, and museum / visitor center functions would also potentially result in the loss of some historic fabric to those structures and buildings. However, these impacts would be minimized to the extent possible by continued law enforcement activities and public education efforts as well as intensive preservation treatment, regular cyclic maintenance, and stabilization of the monument's principal prehistoric and historic structures and buildings as NPS funding and personnel permit. Thus, implementation of this alternative would potentially contribute to beneficial effects on prehistoric and historic structures and buildings in the national monument.

Cumulative Effects: Montezuma Castle National Monument. Prior to establishment of the national monument, prehistoric and historic structures and buildings on lands within and surrounding the present-day monument were adversely impacted by a variety of human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include borrowing building stone from rockshelters; using caves for ranch and settlement-related operations; looting and vandalism; erosion caused by natural forces and human exploration; excavations; removal of deposits; surface collection by explorers, pioneers, investigators, and looters; historic and continuing use of prehistoric irrigation canals; and graffiti. Stabilization and repair projects have been carried out on the national monument's prehistoric structures since the late 19th century that have had negligible to minor, adverse impacts on prehistoric fabric, but over the years, preservation activities have improved as specialized training has resulted in the use of better techniques.

Current and ongoing NPS activities, such as continued law enforcement activities, public education efforts, intensive preservation treatment, and regular cyclic maintenance, would be expected to have beneficial effects on the national monument's prehistoric and historic structures and buildings.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as expansion and development of a regional trails system, Yavapai-Apache expansion of the casino resort at the nearby intersection of Interstate 17 and the monument entrance road, and possible development of the historic Soda Springs Ranch for recreational and/or resort purposes, could have negligible impacts on prehistoric and historic structures and buildings in the national monument because these developments would be expected to increase visitation to the national monument. However, the effects on the monument's prehistoric and historic structures and buildings from the aforementioned activities and developments on lands bordering or in the vicinity of the national monument would be at or below the lower levels of detection and thus would be almost impossible to measure.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects to any cumulative impact on prehistoric and historic structures and buildings. The beneficial impacts to such resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Cumulative Effects: Tuzigoot National Monument. Prior to establishment of the national monument, prehistoric and historic structures and buildings on lands

within and surrounding the present-day monument were adversely impacted by human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include farming; grazing; mining; camping; hiking; hunting; looting and vandalism; poaching; off-road driving; erosion caused by natural forces and human exploration; excavations and removal of deposits by pioneers, explorers, and investigators; and surface collection by investigators and looters. Stabilization and repair projects have been carried out on the national monument's prehistoric structures since the late 19th century that have had negligible to minor, adverse impacts on prehistoric fabric, but over the years, preservation activities have improved as specialized training has resulted in the use of better techniques.

Current and ongoing NPS activities, such as continued law enforcement activities, public education efforts, intensive preservation treatment, and regular cyclic maintenance, would be expected to have beneficial effects on the national monument's prehistoric and historic structures and buildings.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as development of Dead Horse Ranch State Park development and implementation of development proposals in the Verde River Greenway Management Plan, could have negligible impacts on prehistoric and historic structures and buildings in the national monument because they would be expected to increase visitation to the national monument. However, the effects on the monument's prehistoric and historic structures and buildings from the aforementioned planning endeavors and developments would be at or below the lower levels of detection and thus would be almost impossible to measure.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects on any cumulative impact on prehistoric and historic structures and buildings. The beneficial impacts on such resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse*

effect on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Cultural Landscapes

Montezuma Castle National Monument. Under alternative A, cultural landscapes in Montezuma Castle National Monument would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. Although no formal cultural landscape inventory work has been conducted at the national monument, the following known and potential cultural landscape resources have been identified at the reconnaissance survey level of the cultural landscape inventory process:

- Sinaguan occupation remains / Montezuma Castle site cultural landscape resources, including agricultural fields;
- Hohokam occupation remains / Montezuma Well site cultural landscape resources, including irrigation canals;
- New Deal / Civilian Conservation Corps-era historic designed landscape

resources, including rock walls, drainage ditches, and other structural elements, and historic vegetation in the Castle site (NPS development at Montezuma Castle); and

- Homesteading/ranching cultural landscape resources, including historic irrigation canals, agricultural fields, historic trees or other vegetation, and potentially the late 19th century smoke-house structure in the Montezuma Well site.

Pending the results of further survey, inventory, and evaluation, the National Park Service, within the parameters of budget and personnel constraints, would (1) treat cultural landscape resources that are considered potentially eligible for listing in the national register as eligible and (2) recommend listing of the national monument's significant cultural landscapes in the national register. The National Park Service would implement resource management policies that preserve the culturally significant character defining patterns and features and natural resource values of the listed, or determined eligible, landscapes in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (NPS 1992b).

Although the National Park Service would seek to implement the aforementioned policies and procedures to protect and preserve cultural landscape resources in the national monument, the potential for some negligible to minor, adverse impacts on cultural landscape features as a result of human activities and natural processes would likely continue to a slight degree. These activities and processes could include looting and vandalism, graffiti, erosion resulting from natural causes and inadvertent visitor use, illegal collection by looters, and continuing use of prehistoric and historic irrigation canals for agricultural operations. Anticipated increases in visitation levels and visitor access to the

national monument could be expected to result in increasing amounts of intentional and inadvertent disturbance of cultural landscape resources. However, the National Park Service would continue efforts to reduce the impacts on cultural landscape resources through law enforcement activities, public education about the importance and value of such resources, and implementation of the *Secretary's Standards* (NPS 1992b). Thus, implementation of this alternative would potentially contribute to beneficial effects on cultural landscape resources in the national monument.

Tuzigoot National Monument. Under alternative A, cultural landscapes in Tuzigoot National Monument would continue to be surveyed, inventoried, and evaluated under National Register of Historic Places criteria of evaluation to determine their eligibility for listing in the national register as NPS staffing and funding permit. Although no formal cultural landscape inventory work has been conducted at the national monument, the following known and potential cultural landscape resources have been identified at level 0 (park reconnaissance survey) of the cultural landscape inventory process:

- Sinaguan/Hohokam occupation remains cultural landscape resources; and
- New Deal / Works Progress Administration historic designed landscape resources, including the Visitor Center / Administrative complex area and historic vegetation.

As described for Montezuma Castle National Monument, pending the results of further survey, inventory, and evaluation, the National Park Service, within the parameters of budget and personnel constraints, would (1) treat Tuzigoot National Monument cultural landscape resources that are considered potentially eligible for listing in the national register as eligible and (2) recommend listing of the monu-

ment's significant cultural landscapes in the national register. The National Park Service would implement resource management policies that preserve the culturally significant character defining patterns and features and natural resource values of the listed, or determined eligible, landscapes in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes* (NPS 1992b).

Although the National Park Service would seek to implement the aforementioned policies and procedures to protect and preserve cultural landscape resources in the national monument, the potential for some negligible to minor, adverse impacts on cultural landscape features as a result of human activities and natural processes would likely continue to a slight degree. These activities and processes could include looting and vandalism; littering; graffiti; trespassing (after hours entry and entry into closed areas); erosion resulting from natural causes, inadvertent visitor use, and social trails; and intentional pilfering and illegal collection by looters. Anticipated increases in numbers of visitors and visitor access to the national monument could be expected to result in increasing amounts of intentional and inadvertent resource disturbance of cultural landscape resources. However, the National Park Service would continue efforts to reduce the impacts on such resources through law enforcement activities, public education about the importance and value of such resources, and implementation of the *Secretary's Standards* (NPS 1992b). Thus, implementation of this alternative would potentially contribute to beneficial effects on cultural landscape resources in the national monument.

Cumulative Effects: Montezuma Castle National Monument. Prior to establishment of the national monument, cultural landscape resources on lands within and surrounding the present-day monument

were adversely impacted by human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include borrowing building stone from rockshelters; looting and vandalism; excavations, removal of deposits, surface collection by explorers, pioneers, investigators, and looters; historic and continuing use of prehistoric irrigation canals; and graffiti.

Current and ongoing NPS activities, such as survey, inventory, evaluation, and preservation of identified culturally significant character defining patterns and features and natural resource values of listed, or determined eligible, landscapes in accordance with the *Secretary of the Interior's Standards*, would be expected to have beneficial effects on the national monument's cultural landscape resources and result in *no adverse effect* to the monument's cultural landscape resources.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as expansion and development of a regional trails system, Yavapai-Apache expansion of the casino resort at the nearby intersection of Interstate 17 and the monument entrance road, and possible development of the historic Soda Springs Ranch for recreational and/or resort purposes, could have negligible impacts on the monument's cultural landscape resources because they would be expected to increase visitation to the national monument. However, the effects on the monument's cultural landscape resources from the aforementioned activities and developments would be at or below the lower levels of detection, and thus would be almost impossible to measure.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects on any cumulative impact on cultural land-

scape resources. The beneficial impacts on such resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Cumulative Effects: Tuzigoot National Monument. Prior to establishment of the national monument, cultural landscape resources on lands within and surrounding the present-day monument were adversely impacted by human activities and natural causes, some of which have continued to the present and would likely continue to a minor degree if alternative A were implemented. These include looting and vandalism; littering; graffiti; trespassing (after hours entry and entry into closed areas); erosion resulting from natural causes, inadvertent visitor use, and social trails; and intentional pilfering and illegal collection by looters.

Current and ongoing NPS activities, such as survey, inventory, evaluation, and preservation of identified culturally significant character-defining patterns and features and natural resource values of listed, or determined eligible, landscapes in accordance with the *Secretary of the Interior's Standards*, would be expected to have beneficial effects on the national monument's cultural landscape resources.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as development of Dead Horse Ranch State Park and implementation of development proposals in the Verde River Greenway Management Plan, could have negligible impacts on the monument's cultural landscape resources because they would be expected to increase visitation to the national monument. However, the effects on the monument's cultural landscape resources from the aforementioned planning endeavors and developments would be at or below the lower levels of detection and thus would be almost impossible to measure. Viewshed restoration and revegetation

efforts associated with the Freeport McMoRan Tailings Project would be expected to have minor, beneficial impacts on the visible cultural landscape on lands outside the national monument.

Actions under this alternative, when combined with other past, present, and reasonably foreseeable future undertakings in the national monument and surrounding area, would generally be expected to contribute to cumulative beneficial effects on any cumulative impact on cultural landscape resources. The beneficial impacts on such resources associated with the no-action alternative, however, would constitute a relatively small component of any cumulative impact.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on cultural landscape resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on cultural landscape resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Ethnographic Resources and Traditional Cultural Properties

Montezuma Castle National Monument. A comprehensive ethnographic overview and assessment (including an ethnobotanical study) for Montezuma Castle National Monument has not been prepared. Thus, no ethnographic resources or traditional cultural properties have been identified and documented at the national monument. However, Montezuma Well is treated as eligible for consideration as a traditional cultural property.

Under alternative A, the National Park Service would continue to consult with concerned Native American tribes to learn about sites or resources of cultural or religious significance in the national monument and to develop strategies for pro-

tecting and preserving sites or resources that might be identified as well as providing access to areas of traditional cultural and religious importance. The National Park Service would also continue to consult with concerned Native American tribes before taking actions that might affect Native American Graves Protection and Repatriation Act issues and traditional cultural properties; encourage archeologists, anthropologists, and researchers to consult with the Native American tribes regarding areas of interest that could be included in research efforts; and promote ethnographic involvement in excavations and anthropological research.

Although there are no identified ethnographic resources or traditional cultural properties in the national monument at present, implementation of this alternative would be expected to have beneficial impacts on such resources if any were identified and documented pursuant to ongoing consultation and research.

Tuzigoot National Monument. As described for Montezuma Castle National Monument, a comprehensive ethnographic overview and assessment (including an ethnobotanical study) of Tuzigoot National Monument has not been prepared. Thus, no ethnographic resources or traditional cultural properties have been identified and documented at Tuzigoot National Monument.

Under alternative A, the National Park Service would continue to conduct consultations with concerned Native American tribes regarding ethnographic sites and resources and Native American Graves Protection and Repatriation Act issues as described under Montezuma Castle National Monument.

Although there are no identified ethnographic resources or traditional cultural properties in the national monument at present, implementation of this alternative would be expected to have beneficial impacts on such resources if any were identi-

fied and documented pursuant to ongoing consultation and research.

Cumulative Effects: Montezuma Castle National Monument. Under alternative A, there would be no cumulative effects on ethnographic resources or traditional cultural properties in Montezuma Castle National Monument.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as implementation of the Sinaguan Circle Tour, would be expected to contribute to cumulative beneficial effects on any cumulative impact on ethnographic resources and traditional cultural properties that might be identified and documented in the national monument and surrounding area pursuant to ongoing consultation and research.

Cumulative Effects: Tuzigoot National Monument. Under alternative A, there would be no cumulative effects on ethnographic resources or traditional cultural properties in Tuzigoot National Monument.

Current, ongoing, and reasonably foreseeable planning endeavors and development projects, such as implementation of the Sinaguan Circle Tour, would be expected to contribute to cumulative beneficial effects to any cumulative impact on ethnographic resources and traditional cultural properties that might be identified and documented in the national monument and surrounding area pursuant to ongoing consultation and research.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on traditional cultural properties in the national monument. There would also be no impacts on ethno-

graphic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values associated with ethnographic resources or traditional cultural properties. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would *affect no historic properties* in the national monument.

There would also be no impacts on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monument, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of ethnographic resources or traditional cultural properties landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consis-

tent with section 1.4.7.1 of *Management Policies 2006*.

NATURAL RESOURCES

Floodplains

Montezuma Castle National Monument. None of the alternative A actions at Montezuma Castle National Monument would disturb the riparian area, limit the ability of the floodplain to convey floodwaters within the river corridor, or contribute to the height of a flood along Beaver Creek. The creek would continue to periodically flood. The existing gabion would continue to be maintained to protect the cliff dwelling site. Maintenance activities, including erosion control measures, would continue to protect the gabion. These actions would have a negligible, long-term, adverse impact on the floodplain.

None of the actions proposed at Montezuma Well under alternative A would limit the ability of the floodplain to convey floodwaters within the river corridor or contribute to the height of a flood along Wet Beaver Creek. An improved trail would continue to provide visitors an opportunity to walk a short distance along the banks of Wet Beaver Creek. The trail is an impervious surface, and it would continue to have a negligible, local, adverse impact on water flow during floods. These impacts are unlikely to result in measurable changes to the natural river processes and would be negligible in the long term. Management actions to maintain the trail would continue and could include some erosion control measures as necessary. Erosion control measures would reduce adverse impacts from increased turbidity in the water column. The impacts would be local and long-term, and would have a continuing, negligible, adverse effect on river processes in the floodplain.

Tuzigoot National Monument. None of the alternative A actions at Tuzigoot National Monument would limit the ability

of the floodplain to convey floodwaters within the river corridor or contribute to the height of a flood along the Verde River or in Tavaschi Marsh. The Verde River flows along the boundary of the monument. The access road for the monument would remain in its current location across the Verde River. There would continue to be no formal access to the Verde River or to Tavaschi Marsh from within the monument. Social trails along the Verde River could contribute to erosion during high water.

Cumulative Impacts. There are no past, present, or reasonably foreseeable future actions outside Montezuma Castle National Monument that would contribute to the height of a flood along the creek or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. Similarly, no actions could adversely impact aquatic habitat in the creek. Consequently, there would be no cumulative impacts on floodplains under alternative A at Montezuma Castle National Monument.

At Tuzigoot National Monument, the Verde River Greenway Master Plan (Arizona State Parks 2004) proposed the development of a 10-foot wide, granular stone surfaced trail for non-motorized use along the length of the greenway, including lands within the legislative boundary of the monument. The trail would not add any impervious surface to the floodplain and thus would not contribute to the height of a flood along the river or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. The presence of a formalized trail could reduce the number of social trails along the creek. This trail would reduce the erosion potential along the entire corridor, providing a long-term benefit for aquatic habitats. Alternative A would result in negligible, adverse, cumulative impacts to the height of a flood along the creek and would not adversely

impact the ability of the floodplain to convey floodwaters within the river corridor.

Conclusion. Alternative A would result in negligible, long-term, adverse impacts on floodplains in Montezuma Castle and Tuzigoot national monuments. Maintenance activities that reduce erosion would have a local, negligible, long-term, adverse impact on river processes at Montezuma Castle National Monument, although reduced erosion would represent a negligible to minor benefit to the floodplain. There would be no cumulative impacts under alternative A at Montezuma Castle National Monument. Alternative A would result in negligible, adverse, cumulative impacts to floodplains at Tuzigoot National Monument. These effects would not constitute an impairment of resources or values associated with floodplains at either monument. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Soils and Vegetation

Montezuma Castle National Monument. There are no new actions proposed under alternative A that would disturb soils, increase the erosion potential, or decrease soil productivity at Montezuma Castle National Monument. Because the existing trails are hardened, there would be no new impacts on soil from use of these trails. Ongoing management actions to control erosion along the trail would continue. The long-term, adverse impacts of these actions on soils in the monument would be negligible. Under this alternative, no new actions are proposed that would change the abundance and distribution of individual plants or communities at the monument or change ecological processes or biological productivity. Efforts to manage and control nonnative and exotic plant species would continue to have long-term, minor, beneficial impacts

on the native vegetation in the monument. Ongoing management actions (for example, maintenance) would have local impacts on native vegetation at the monument. These actions would include but not be limited to trimming trees and shrubs near the existing trail from the visitor center to the Castle. The long-term, adverse impacts of these actions on the native vegetation at the monument would be negligible.

Tuzigoot National Monument. There are no new actions proposed under this alternative that would disturb soils, increase the erosion potential, or decrease soil productivity at Tuzigoot National Monument. Because the existing trails are hardened, there would be no new impacts on soil from use of these trails. Ongoing management actions to control erosion along the trail would continue. The long-term, adverse impacts of these actions on soils in the monument would be negligible. Under this alternative, there are no new actions proposed that would change the abundance and distribution of individual plants or communities at Tuzigoot. There would be no change to ecological processes or biological productivity at the monument. Efforts to manage and control nonnative and exotic plant species would continue. These efforts would have long-term, minor, beneficial impacts on the native vegetation at Tuzigoot.

Cumulative Impacts. There are no past, present, or reasonably foreseeable actions outside Montezuma Castle National Monument that would affect soils or vegetation at the monument. Consequently, there would be no cumulative impacts under alternative A at Montezuma Castle National Monument on soils or vegetation.

At Tuzigoot National Monument, the Verde River Greenway Master Plan proposed the development of a 10-foot wide, granular stone surfaced trail for non-motorized use along the length of the

greenway, including lands within the legislative boundary of the monument (Arizona State Parks 2004). Development of the trail would have a local impact on the soils and vegetation, including an increase in erosion potential and the removal of some vegetation. The erosion potential could be reduced during trail development by using best management practices that could include the installation of silt fencing. The short-term impacts of the trail development would be adverse but negligible. Trail maintenance activities, including best management practices, would help to minimize the potential for erosion along the trail. The long-term, adverse impacts of the trail on soil erosion would be negligible.

The impacts of alternative A on soils in combination with the impacts of the proposed greenway trail would result in negligible, long-term, adverse cumulative impacts on soils. Although some vegetation would be removed, the impacts would be local and not likely to change the abundance and distribution of individual plants or communities. If nonnative or exotic species are present, management actions may be necessary to control the spread of these species once the ground has been disturbed to minimize any adverse impacts on native plants from trail development. The long-term, adverse impacts from nonnative and exotic species would be negligible. The impacts of alternative A in combination with the impacts of the proposed greenway trail would result in negligible, long-term, adverse, cumulative impacts to vegetation.

Conclusion. There are no new actions proposed under alternative A that would disturb soils, increase the erosion potential, or decrease soil productivity in either Montezuma Castle or Tuzigoot National Monument. Ongoing management actions to control erosion along the existing trails would continue. The long-term, adverse impacts of these actions on soils in the monument would be negligible. Efforts to

manage and control nonnative and exotic plant species would continue at both monuments, as would trimming certain native trees and shrubs at Montezuma Castle. These efforts would continue to have both beneficial and adverse, long-term, negligible impact on the native vegetation in Montezuma Castle National Monument and beneficial, long-term, negligible impact in Tuzigoot National Monument.

This alternative would result in negligible, long-term, adverse, cumulative impacts on the soils and vegetation at Tuzigoot National Monument by increasing the potential for soil erosion or vegetation trampling resulting from the proposed greenway trail. The long-term, adverse, cumulative impacts from nonnative and exotic species would be negligible. These effects would not be sufficient to constitute an impairment of soil or vegetation resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wetlands

Under this alternative, current management actions would continue, and there would be no effects on wetlands at Montezuma Castle National Monument, resulting in a continuation of the existing, long-term, negligible to minor, adverse impacts. Additionally, no new actions would be taken to restore or maintain the natural hydrologic functions in the Tavaschi Marsh at Tuzigoot National Monument. This would allow the marsh to silt in over time and result in the loss of wildlife habitat in Tuzigoot National Monument. The long-term, adverse impact on wetlands and their natural hydrologic functions and wildlife habitat values in Tavaschi Marsh would continue to be minor to moderate.

Cumulative Impacts. The Verde River Greenway Management Plan could devel-

op trails and other infrastructure (for example, a boat ramp and parking lot) near Tavasci Marsh at Tuzigoot National Monument. These actions could create additional visitor opportunities that, with increased use, could affect wetlands. However, the adverse effects of increased visitation or development associated with the Verde River Greenway Management Plan would likely be local and negligible, and the contribution toward adverse, cumulative impacts on wetlands would also be negligible.

Conclusion. There are no new actions proposed under alternative A that would have adverse impacts on wetland functions or wetland habitat values at Montezuma Castle or Tuzigoot national monuments, resulting in long-term, negligible to minor impacts. Ongoing management actions would continue to allow silt to accumulate in Tavasci Marsh, which would have a long-term, minor to moderate, adverse impact on wetland functions and habitat. Increased visitation or development associated with the Verde River Greenway Management Plan would have local, negligible, adverse, cumulative impacts on wetlands. The impacts of alternative A would not be sufficient to constitute an impairment of wetland resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wildlife

Montezuma Castle National Monument. At the Castle, visitors would continue to have opportunities to walk near the cliff dwelling and above Beaver Creek on the existing hardened trail. No new actions would be proposed under this alternative that would disturb wildlife or adversely impact wildlife habitat at the Castle.

Visitors would continue to visit Montezuma Well and Wet Beaver Creek on the existing hardened trail. The picnic area would continue to be accessible, but there would be no formal access to the former pasture lands. No new actions would be proposed under this alternative that would disturb wildlife or adversely impact wildlife habitat at Montezuma Well.

Tuzigoot National Monument. Visitors would continue to have formal access to the dwelling, but there would be no formal access to the marsh, river, or riparian area from within the monument. No new actions would be proposed under this alternative that would disturb wildlife or adversely impact wildlife habitat at Tuzigoot. Informal access to the Verde River would continue from the road into the monument. The informal access could disturb wildlife, particularly birds nesting or foraging in the riparian area. This would represent a long-term, minor, adverse effect on wildlife. Social trailing by visitors along the Verde River and the potential for erosion would continue. Erosion-borne sediment could have an adverse impact on aquatic habitat for some aquatic species, but assuming no increased turbidity over current levels, the adverse impacts would be local and negligible in the long term.

Cumulative Impacts. There are no past, present, or reasonably foreseeable actions outside the Montezuma Castle National Monument that would adversely impact wildlife or wildlife habitats. Consequently, there would be no cumulative impacts under alternative A on wildlife or wildlife habitat. At Tuzigoot National Monument, the Verde River Greenway Master Plan proposed the development of a 10-foot wide, granular stone surfaced trail for non-motorized use along the length of the greenway, including lands within the legislative boundary of the monument (Arizona State Parks 2004). Development of the trail would have local effects on wildlife

habitat within the monument along the Verde River. These impacts would include disturbance that could limit foraging activity or adversely impact nesting.

These impacts could be reduced by timing trail development to minimize the impact on breeding activity. The long-term impacts of the trail development would be adverse and negligible to minor but would be unlikely to affect the distribution of individuals in a local area and would not have an impact on viability of the regional population. The impacts of alternative A in combination with the impacts of the proposed greenway trail would result in negligible to minor, cumulative, long-term, adverse effects on wildlife and wildlife habitat.

Conclusion. There are no new actions proposed under alternative A that would have adverse impacts on wildlife or wildlife habitat in the monuments. Formal access within the monuments would continue to limit impacts on wildlife and wildlife habitat. However, informal access to the Verde River at Tuzigoot National Monument would continue from the road into the monument, representing a long-term, minor, adverse effect on wildlife. Assuming no increased turbidity over current levels, the adverse impacts on wildlife of erosion caused by social trailing would be local and negligible in the long term.

There would be no cumulative impacts under alternative A at Montezuma Castle National Monument. Alternative A would result in a short-term, negligible to minor, adverse, cumulative impacts on wildlife and wildlife habitat at Tuzigoot National Monument as a result of trail development along the Verde River. The long-term, adverse, cumulative impacts on wildlife and wildlife habitat would be negligible to minor and result from the potential for ongoing disturbance of wildlife throughout the year by visitors. The effects of alternative A would not constitute an impairment of wildlife or wildlife habitat resources or values. Implementation of this alternative

would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Threatened and Endangered Species

Southwestern Willow Flycatcher. Management actions at Montezuma Castle National Monument would continue to focus on maintaining habitat in the monument to support flycatcher breeding activities along the Verde River. There would be no effects on flycatcher habitat or individual flycatchers foraging at the monument under this alternative.

At Tuzigoot National Monument, management actions at Tavaschi Marsh would be minimal, and over time the marsh could silt in. This could change the riparian habitat in the marsh such that it is no longer suitable for flycatcher foraging; however, this would only have an effect on a limited area. Change in the marsh habitat could have a long-term effect on flycatcher habitat in the monument, but the presence of substantial suitable habitat in the area would result in a “not likely to adversely affect” determination.

Cumulative Impacts. There is a documented nesting site for southwestern willow flycatcher just outside the monument boundaries in the riparian area of the Verde River. Ditch maintenance activities in the area help maintain the conditions that the flycatcher favors when nesting. The ongoing ditch maintenance activities would have a long-term, beneficial effect on flycatcher habitat, so alternative A would not likely adversely affect the southwestern willow flycatcher.

Visitors would continue to have informal access to the Verde River from the bridge on the access road to the monument, but no formal access would be provided. Although the flycatcher is known to be shy, current visitation levels have not discouraged the flycatcher from nesting near the bridge. In the long term, the informal access to the Verde River could affect, but

is not likely to adversely affect, flycatcher nesting activity in this location.

As described above, the Verde River Greenway Master Plan (Arizona State Parks 2004) would affect lands within Tuzigoot National Monument. In addition, a small parking lot and boat launch is proposed on state land on the east side of the monument entrance road. This development would be outside the monument boundary but would require modifications to the existing roadway. The proposed location of the boat launch is within the designated critical habitat for the flycatcher, and vegetation in the vicinity has been used for nesting. Increased activity could disturb the flycatcher and discourage continued use of the area for nesting. The National Park Service would work with Arizona State Parks to minimize the adverse impacts associated with the multi-use trail. For example, the effects of the boat launch could be reduced by shifting visitor activity on the river away from the patch of vegetation that serves as nesting habitat. In addition, any trail development should avoid creating new or longer edges along a nesting patch that could make the nests more vulnerable to predation. The proposed trail could have long-term effects on the nesting habitat for the flycatcher along the Verde River, but these effects are unlikely to be adverse. The long-term effects of alternative A in combination with the effects of the other actions described above could cumulatively affect flycatcher habitat, although the resulting effects would not likely be adverse.

Conclusion. There would be no effects on flycatcher habitat or individual flycatchers foraging at Montezuma Castle National Monument under this alternative. Long-term, ongoing management actions could benefit flycatcher habitat; thus, the effects would not likely be adverse.

Change in the Tavaschi Marsh habitat at Tuzigoot National Monument could have a long-term effect on flycatcher habitat in

the monument, but the presence of substantial suitable habitat in the area would result in a “not likely to adversely affect” determination.

Outside the boundaries at Tuzigoot National Monument, the ongoing ditch maintenance activities could have a long-term benefit on flycatcher habitat. Informal access to the Verde River could affect, but is not likely to adversely affect, flycatcher nesting activity in this location. The proposed Verde River Greenway trail could affect flycatcher nesting habitat along the Verde River, but these effects are unlikely to be adverse. The long-term effects of alternative A in combination with the effects of the other actions described above could affect the flycatcher habitat, resulting in potential long-term, cumulative effects, although these effects are not substantial or widespread enough to be considered adverse.

Yuma Clapper Rail. No marsh restoration activities would be undertaken to maintain natural hydrologic functions in Tavaschi Marsh at Tuzigoot National Monument. As described for the southwestern willow flycatcher, this could change some marsh habitat, but the changes would be unlikely to affect individuals or the viability of the clapper rail population.

Under this alternative, the clapper rail would continue be exposed to low levels of selenium in the water column and potentially higher levels of selenium through its food supply. Long-term exposure to selenium could affect reproductive success of the clapper rail in the future; however, the clapper rail is not a resident of the Tavaschi Marsh, and exposure to selenium while migrating through the marsh could affect but is not likely to adversely affect reproductive success of the clapper rail.

Cumulative Impacts. There are no past, present, or proposed actions that would

affect the Yuma clapper rail or its habitat at Tavaschi Marsh.

Conclusion. Under the no-action alternative, Tavaschi Marsh could silt in over time. Changes in rail habitat in Tavaschi Marsh would be unlikely to affect individuals or the viability of the clapper rail population. Clapper rails migrating through the marsh would be exposed to selenium while at the marsh, which could affect, but is unlikely to adversely affect, reproductive success for these individuals or the population as a whole. There would be no cumulative effects on clapper rails or their habitat under this alternative.

Yellow-billed Cuckoo. Current management actions would not have an effect on the gallery forest habitat used by yellow-billed cuckoo for nesting and forage at Montezuma Castle and Tuzigoot national monuments.

Cumulative Impacts. There are no past, present, or proposed actions that would contribute to cumulative effects on the yellow-billed cuckoo or its habitat at either of the monuments.

Conclusion. There would be no effects on the habitat or population of yellow-billed cuckoo at Montezuma Castle or Tuzigoot national monuments. There would be no cumulative effects on the yellow-billed cuckoo associated with alternative A.

Alternative A would not constitute an impairment of resources or values associated with threatened and endangered species at Montezuma Castle or Tuzigoot National Monument. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

VISITOR USE AND EXPERIENCE

Visitor Experiences of Monument Resources

Visitor experiences of the monuments' resources would continue to be positive but relatively short, with little variety. Visitors would continue to have access to high-quality viewing opportunities of each of the monuments' primary archeological resources, which is considered the most important element of most visitors' experiences; therefore, continuing to provide these opportunities would result in a continued long-term, major, beneficial effect for visitors.

At Montezuma Castle, the concentration of visitors on a short, paved trail to view the castle would continue to result in times of congestion and crowding as use levels remained stable or increased over the long term, resulting in a long-term, minor, adverse impact.

During peak season at Montezuma Castle, congestion in the parking lot from too many cars and buses and the related impacts of noise and smell from a large number of vehicles would continue to have a long-term, minor, adverse impact on visitors' experiences.

Visitors would continue to have minimal interaction with the Castle's natural and cultural resources because of physical barriers (for example, fencing) and restrictions (for example, signs to stay on paved trails). Several people commented on the lack of intimacy with resources at the Castle because of high levels of development and lack of access to much of the monument's land base, particularly Beaver Creek. For these visitors who would be interested in more self exploration opportunities, especially access to Beaver Creek and the associated riparian area, this will continue to be a long-term, moderate, adverse impact.

Montezuma Well would continue to offer opportunities for quiet and solitude in natural and cultural settings, including the

outlet of the well, the trails around the well, and the monument's picnic area. These experiences are very important to many Montezuma Well visitors. Continuing to have these opportunities available would result in an ongoing long-term, major benefit for visitors seeking these kinds of experiences.

At Tuzigoot, the opportunity to come in close contact with a major surface ruin is highly valued by most visitors. Continuing to provide this opportunity would result in a continued long-term, major, beneficial effect on visitor experiences.

The viewshed of Tuzigoot's surrounding cultural landscape is partially interrupted by the mine tailings. During the 2003-2004 visitor study, one of the most highly ranked concerns for visitors to all three sites was the visual impact of the mine tailings at Tuzigoot (White and Virden 2004). This interruption of the viewshed will continue to be a long-term, major, adverse impact on the visitor experience. Another concern of current visitors is the lack of trail connections to the nearby state park, which limits visitors' opportunities to experience both public lands, contributing to a long-term, minor, adverse impact.

Access to Orientation, Interpretation, and Education

Currently, there is limited general orientation to all three sites, resulting in a lack of connectedness of the sites and their stories. This lack of connectedness limits visitors' knowledge of Sinaguan history, since each site plays a unique role in telling the story. In addition, the lack of orientation limits the likelihood that visitors will visit more than one or two of the sites. This lack of general orientation will continue to be a long-term, moderate, adverse impact on visitors' opportunities for orientation and interpretation of Sinaguan history.

Because of limited staff and site opportunities, there are few opportunities for "hands-on" interpretive activities at any of

the sites. The public has expressed interest in more interpretive programming and demonstrations, especially by modern-day affiliated tribes. For visitors interested in these types of interpretive opportunities, this will continue to be a long-term, moderate, adverse impact.

At Montezuma Castle, congestion in the visitor center is a problem at times because of the small space and high visitation during peak season. Visitors are unable to easily view exhibits and visit the bookstore, resulting in a long-term, minor, adverse impact on opportunities for orientation and interpretation. In addition, there are no facilities for group interpretation opportunities, which limits the monument's ability to provide consistent and diverse interpretive programming. Primarily, interpretation is provided via waysides and a roving interpreter. For visitors seeking more consistent and diverse programs, this will remain a long-term, moderate, adverse impact.

At Montezuma Well, there are very limited opportunities for site orientation and interpretation. The visitor contact station is a small prefabricated concrete building with room for only two or three staff. Visitors access information from monument staff through a sliding window in the mobile trailer. In addition, there is no space for personal services and programs, which limits the monument's ability to provide consistent and diverse interpretive programming. Interpretation is primarily provided via waysides and a roving interpreter.

The limited orientation and education available at the site will continue to result in a long-term, moderate, adverse impact on visitors.

There is some confusion over the way visitors arrive at the site that results from poor signage and facility layout. This confusion leads most visitors to only visit the well and not take advantage of the picnic area, which offers quiet and shade. This

will continue to result in a long-term, minor, adverse impact on visitors.

At Tuzigoot, there are no facilities for group interpretation opportunities, which limits the monument's ability to provide consistent and diverse interpretive programming. Interpretation is primarily provided via waysides and a roving interpreter. For visitors seeking more consistent and diverse programs, this will remain a long-term, moderate, adverse impact.

Visitor Safety

Safety information will continue to be available, although occasional crowding at Montezuma Castle's visitor center and the limited orientation facilities at Montezuma Well would continue to make it difficult to gain a comprehensive understanding of safety factors, leading to a long-term, minor, adverse impact.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on the visitor experience.

At Montezuma Castle, the proposed Yavapai-Apache Nation Native American Cultural Center will likely have long-term, moderate, beneficial impacts on interpretation and education opportunities related to the cultural history of the region. Currently, the Castle visitor center has updated and modern exhibits, but the space and amount of exhibits are limited. The cultural center would complement and enhance the opportunities provided at the Castle. However, the cultural center will likely attract visitors to the area and may increase visitation to the Castle, which may contribute to the already crowded conditions that occur in the parking area, visitor center, and along the loop trail. Because the no-action alternative would not alleviate current crowded conditions, visitation resulting from the attractions at the cultural center could increase this adverse impact at the Castle.

The regional, multi-use trail proposed along Montezuma Castle Highway would have a beneficial impact on recreation opportunities. However, the no-action alternative would not provide the connection of the regional trail through the monument, which would result in a long-term, adverse, cumulative impact to this proposed recreation opportunity.

At Montezuma Well, surrounding residential development projects could lead to increased visitation to Montezuma Well that may impact the contemplative settings at the outlet, along the trails, and in the picnic area. Also, these developments may have a negative impact on the scenic viewsheds around Montezuma Well. The no-action alternative has no proposals that would mitigate these potential adverse impacts.

At Tuzigoot, the camping and reservoir improvements at Dead Horse Ranch State Park would increase the desirability of the state park for day and overnight use, leading to a potential increase in demand for trail connections between Tuzigoot and the state park. This increase in demand would contribute to the existing, long-term, adverse impacts resulting from the lack of trail connections between the monument and the park.

The proposed recreation opportunities that would be part of the Verde River Greenway, which runs along the southern boundary of Tuzigoot, would enhance recreation opportunities for Tuzigoot visitors. However, the no-action alternative would not contribute to the beneficial impacts of the Verde River Greenway.

The restoration of the mine tailings by Freeport McMoRan, particularly the covering of the tailings with topsoil to promote vegetation growth, would likely have a major, beneficial, cumulative impact on visitor experiences at Tuzigoot by improving the scenic viewshed.

The proposed Sinaguan Circle Tour could enhance the interpretive opportunities at all three sites by connecting all of the Si-

naguan sites in the region via an interpretive, self-guided tour with associated resource materials. The no-action alternative would not enhance or substantially contribute to this beneficial cumulative impact.

Conclusion

Alternative A would result in continuing minor, beneficial impacts resulting from the continued opportunities to view the monuments' prime cultural resources. However, minor, adverse impacts from crowding and congestion at peak times in the parking lot, main loop trail, and visitor center at Montezuma Castle would continue during peak times and may get worse with increasing visitation. In addition, the lack of adequate interpretive and education facilities for regular and diverse programming would continue to have a minor, adverse impact on visitors.

MONUMENT OPERATIONS

Alternative A consists of a continuation of current management conditions. There would be no new facilities provided at any of the sites, nor would existing monument operations be changed substantially.

Montezuma Castle National Monument

The congestion and crowding in Montezuma Castle National Monument would continue because of limited space and large crowds. Areas currently experiencing congestion during the peak tourist season at Montezuma Castle include the visitor center, the trail to the Montezuma Castle, and the visitor parking lot. This results in visitors waiting for information, resource impacts adjacent to the trail, and parking in improper areas. Based on the assumption that crowded conditions would increase in the future, alternative A would result in long-term, minor, adverse effects on monument operations at Montezuma Castle National Monument.

There are very limited opportunities at Montezuma Well for site orientation and interpretation. The visitor contact station is a small prefabricated concrete building with room for only two to three staff. Visitors access information from monument staff through a sliding window in the mobile trailer. In addition, there is no space for personal services and programs, which limits the monument's ability to provide consistent and diverse interpretive programming. Interpretation is primarily provided via wayside exhibits and a roving interpreter. The signage and facility layout is confusing to some visitors, resulting in visitors only visiting the well and missing the picnic area, which offers shade and quiet. Alternative A would result in long-term, minor, adverse effects on monument operations at Montezuma Well.

Tuzigoot National Monument

Although a visitor center is located at Tuzigoot, there are no facilities for group interpretation opportunities, which limits the monument's ability to provide consistent and diverse interpretive programming. Interpretation is primarily provided via wayside exhibits and a roving interpreter. Alternative A would result in long-term, minor, adverse effects on monument operations at Tuzigoot National Monument.

All Sites

The limited staff is spread over three sites and an offsite headquarters. Travel time is approximately 30 minutes between Tuzigoot and Montezuma Castle or Montezuma Well. It is difficult to quickly respond to needs or demands in another site under these conditions. There would continue to be limited opportunities for close contact between visitors and natural and cultural features of the monument. Because of limited staff and site opportunities, there are few opportunities for "hands-on" interpretive activities at any of the sites. The public has expressed interest

in more interpretive programming and demonstrations, especially by modern-day affiliated tribes. The sites would remain autonomous with limited connectivity. There would be limited interpretation for a particular site beyond the boundaries of that site. There would be limited offsite programs and limited opportunities for group programs and/or cultural demonstrations.

Resource-related activities would continue to focus on stabilizing the primary sites. Many areas in each of the sites would remain off-limits to visitors to protect sensitive cultural resources. The principal archaeological resources, such as the Tuzigoot Pueblo and Montezuma Castle, would receive intensive preservation treatment and regular cyclic maintenance. Other archaeological resources would be stabilized or allowed to molder pursuant to section 106 consultation. Natural resource management activities would continue to be limited by a lack of staff and funding. Overall, the implementation of alternative A would result in long-term, minor, adverse effects on monument operations throughout the monuments.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on monument operations. The proposed Yavapai-Apache Nation Native American Cultural Center would complement and enhance the opportunities already provided at Montezuma Castle. Currently, the Montezuma Castle visitor center has updated and modern exhibits, but the space and number of exhibits are limited. However, the cultural center would attract visitors to the region and may increase visitation to Montezuma Castle, which would result in long-term, minor, adverse conditions on monument operations, based on the current crowded conditions that occur in the parking area, visitor center, and along the loop trail.

The expansion of the casino-resort operated by the Yavapai-Apache tribe near the

Montezuma Castle entrance road could increase visitation at Montezuma Castle, and possibly the other sites. This would result in long-term, minor, adverse effects on monument operations.

The possible development of the Soda Springs Ranch, expansion of recreational opportunities at Dead Horse Ranch State Park, and development associated with the Verde River Greenway Management Plan could also attract additional visitors, who could also visit the monuments. At Montezuma Well, surrounding residential development projects could lead to increased visitation that may affect monument operations by increasing crowding.

The proposed Sinaguan Circle Tour could enhance the interpretive opportunities at all three sites by connecting all of the Sinaguan sites in the region via an interpretive, self-guided tour with associated resource materials. This could increase visitation at all of the sites, which could create a long-term, adverse effect on monument operations because of the increased visitation. Expansion of the parking area at Montezuma Castle would reduce parking problems at that site but would increase maintenance responsibilities of the monument. The effects of alternative A in combination with the effects of other past, present, and reasonably foreseeable future actions would result in long-term, minor, adverse, cumulative effects on monument operations.

Conclusion

Alternative A would result in long-term, minor, adverse effects on monument operations. The congestion and crowding in the Montezuma Castle National Monument, very limited opportunities at Montezuma Well for site orientation and interpretation, facilities that limit the monument's ability to provide consistent and diverse interpretive programming, and distribution of staff between three sites and offsite headquarters and maintenance facilities would continue. The effects of alternative A in combination with the ef-

fects of other past, present, and reasonably foreseeable future actions would result in long-term, minor, adverse, cumulative effects on monument operations.

SOCIOECONOMICS

Alternative A consists of a continuation of current management conditions and actions. At all sites, there would not be any new facilities or changes to management strategies that would result in additional visitation to the monuments. No construction activity would occur at the monuments that would result in additional construction expenditures in the region. There would be no changes at the monuments that would result in additional monument employment.

The monuments would continue to rent office space for the headquarters in Camp Verde and space for maintenance facilities on tribal lands, which contributes a small amount of money to the regional economy. The staff live in the region and spend money in the region, which benefits the economy. The monuments also spend money in the region for supplies. Alternative A would result in a negligible, long-term, beneficial effect on socioeconomics in the region.

Under the no-action alternative, modest growth in annual recreation visitation is foreseeable, based on regional population growth and the continued popularity of Sedona as a tourism destination. However, the fundamental visitor experience would remain largely unchanged. Consequently, long-term annual visitation under the No-Action is assumed to average about 800,000 visitors. Annual visitation may vary based on influences such as fuel prices (high prices lead to decreased visitation) or a highway detour redirecting more traffic by one or both sites (increasing visitation).

The area's recent population growth is expected to continue under the no-action alternative. This alternative would not al-

ter the population growth forecast for the Verde Valley or for surrounding areas in Yavapai and Coconino counties.

Changes in annual visitation to the national monuments would be accompanied by corresponding effects on visitor spending in the regional economy, affecting local retail, lodging, eating and drinking, and other service establishments. Local governments would also experience impacts on local sales tax receipts. A sustained and consistent trend of increasing visitation could also result in impacts on local employment as establishments add staff in response to the changes in spending.

Assuming future visitation reflects the local/non-local visitor mix, day-use/overnight stays, and typical spending profiles characterizing current visitors, annual visitor spending would increase by about \$900,000 annually with the increase to 800,000 annual visitors. The added spending would support 18 new jobs and \$252,000 in annual personal income in the Verde Valley. These impacts would be long-term. Impacts of comparable magnitudes, but in the opposite direction (that is, a reduction of 18 jobs) would result should a comparable reduction in spending occur, such as that which might accompany a short-term decline in visitation. Increases of the magnitudes outlined above would not fundamentally alter the structure or functioning of the regional economy.

Implementation of the no-action alternative would result in the estimated expenditure of \$1.03 million in capital improvement spending over the life of the general management plan. Temporary job and income impacts could be associated with some improvement projects at the national monuments paid for using fee demo funding. In many instances, the projects would be completed by the maintenance staff at the national monuments, with fee demo funding used primarily to purchase supplies, construction materials, and equipment. Contractors would be hired to

complete other projects. In either case, completion of the projects anticipated under the no-action alternative support the established base of contractors, construction supply firms, and associated firms in the Verde Valley, but would likely result in little new hiring or alteration of the structure or functioning of the economy.

No changes in NPS staffing or other operations are expected under the no-action alternative. Consequently, there would be no long-term economic impacts associated with alternative A.

The no-action alternative would not affect other social and economic conditions in the Verde Valley.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on socioeconomic conditions. The expansion of the casino-resort operated by the Yavapai-Apache tribe near the Montezuma Castle entrance road and the proposed Yavapai-Apache Nation Native American Cultural Center would attract tourists and visitors, who would spend money in the region for food and lodging. The possible development and expansion of recreational opportunities at Soda Springs Ranch and Dead Horse Ranch State Park, and development associated with the Verde River Greenway Management Plan, could attract additional visitors, who would spend additional money on food and lodging. The proposed Sinaguan Circle Tour could attract additional visitors who would spend money on food and lodging. The Freeport McMoRan Tailing Project could lead to additional regional spending, which could help boost the regional economy.

The residential development projects and other land uses surrounding monuments could lead to additional population in the area, which could also lead to additional jobs and additional spending, which would boost the regional economy. As population continues to grow, increasing development on lands adjacent to and sur-

rounding the monuments could result in impacts on surface and groundwater resources that could result in long-term, minor to moderate, adverse, cumulative effects. The discharge of groundwater from Shea Spring and Montezuma Well may be affected by groundwater withdrawals in specific areas around two water sources. These have not yet been definitively determined. NPS has initiated two studies to determine the vulnerability of the two water sources to groundwater withdrawals.

Changing land uses and population growth could affect water use and Verde River water-right adjudication.

There are some water quality issues at Tuzigoot related to external influences. The Tavasci Marsh is supported by two sources of hydrologic input. One source is Shea Spring and other small seeps. The Verde River, via Pecks Lake, provides the other source of water. Peck's Lake was placed on the Water Quality Limited List (303d List) in 1998 for violations in the state's dissolved oxygen and pH standards. Peck's Lake water quality conditions may have been influenced by a golf course adjacent to the lake and a dairy just below the lake outlet. Phelps Dodge Corporation owns the land around Peck's Lake and has plans to develop approximately 550 acres, including a golf course, residential housing, and commercial infrastructure.

Conclusion

The effects of the no-action alternative on socioeconomic conditions in the Verde Valley would be long-term and beneficial, but negligible.

IMPAIRMENT CONCLUSION FOR ALTERNATIVE A

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or oppor-

tunities for enjoyment of the national monuments, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of

resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

IMPACTS OF IMPLEMENTING ALTERNATIVE B (PREFERRED)

CULTURAL RESOURCES

Archeological Resources

Montezuma Castle National Monument. Implementation of alternative B would generally have the same impacts on archeological resources in Montezuma Castle National Monument as those described under alternative A. Where possible, new facilities, such as trails, would be constructed in already disturbed areas, and all ground-disturbing activities would be preceded by site-specific archeological surveys. However, actions under this alternative, such as placing the river corridor just south of the castle and the corridor along Montezuma Castle and Beaver Creek Estates Roads in the Interaction and Discovery zone to accommodate natural surface trails, interpretive signage, and regional trail activities (for example, horseback riding, hiking, and mountain biking), could result in some additional negligible impacts to archeological resources from inadvertent visitor use or looting and vandalism.

Tuzigoot National Monument. Implementation of this alternative would generally have the same impacts on archeological resources in Tuzigoot National Monument as those described under alternative A. Where possible, new facilities, such as trails, parking facilities, and boat launches, would be constructed in already disturbed areas, and all ground-disturbing activities would be preceded by site-specific archeological surveys. However, actions under this alternative, such as placing areas to the east, north, and south of the Pueblo in the Interaction and Discovery zone to accommodate natural surface trails and regional trail connections, and construction of a proposed small parking area and boat launch on the east side of the entrance road at the Verde River, could result in some additional negli-

ble impacts to archeological resources from inadvertent visitor use or looting and vandalism.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative B would generally have the same cumulative effects on archeological resources as those listed under alternative A, although expanded interpretation and education could improve visitor stewardship.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative B would generally have the same cumulative effects on archeological resources as those listed under alternative A, although expanded interpretation and education could improve visitor stewardship.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have no adverse effect on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions un-

der this alternative would have *no adverse effect* on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Prehistoric and Historic Structures and Buildings

Montezuma Castle National Monument. Implementation of this alternative would generally have the same impacts on prehistoric and historic structures and buildings in the national monument as those described under alternative A.

Tuzigoot National Monument. Implementation of this alternative would generally have the same impacts on prehistoric and historic structures and buildings in the national monument as those described under alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative B would generally have the same cumulative effects on prehistoric and historic structures and buildings as those listed under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative B would generally have the same cumulative effects on prehistoric and historic structures and buildings as those listed under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act,

the National Park Service determined that actions under this alternative would have no adverse effect on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have no adverse effect on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Cultural Landscapes

Montezuma Castle National Monument. Implementation of alternative B would generally have the same impacts on cultural landscape resources in the national monument as those described under alternative A.

Tuzigoot National Monument. Implementation of alternative B would generally have the same impacts on cultural land-

scape resources in the national monument as those described under alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative B would generally have the same cumulative effects on cultural landscape resources as those listed under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative B would generally have the same cumulative effects on cultural landscape resources as those listed under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have no adverse effect on cultural landscape resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have no adverse effect on cultural landscape resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values asso-

ciated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Ethnographic Resources and Traditional Cultural Properties

Montezuma Castle National Monument. Alternative B would generally have the same impacts on ethnographic resources and traditional cultural properties in the national monument as those described under alternative A.

Tuzigoot National Monument. Implementation of alternative B would generally have the same impacts on ethnographic resources and traditional cultural properties in the national monument as those described under alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative B would generally have the same cumulative effects on ethnographic resources and traditional cultural properties as those described under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative B would generally have the same cumulative effects on ethnographic resources and traditional cultural properties as those described under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would *affect no historic properties* in the monument. There would also be no impacts on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values asso-

ciated with ethnographic resources or traditional cultural properties. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would *affect no historic properties* in the national monument. There would also be no impacts on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with ethnographic resources or traditional cultural properties. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

NATURAL RESOURCES

Floodplains

Montezuma Castle National Monument. Under the preferred alternative, there would be greater impacts than for alternative A on the floodplain. Visitors would have the opportunity to explore the riparian area on the side of Beaver Creek opposite from Montezuma Castle. Visitors would be able to cross Beaver Creek during dry periods. This crossing would not be available during periods of normal to high flow in the creek. A route across the creek would be marked, but there would be no modification to the riverbed that would alter the water flow in the creek or increase erosion. There would also be no change in the water-carrying capacity of the floodplain, nor would alternative B raise the height of flood waters. The po-

tential long-term, adverse impacts on the floodplain as a result of the designated route across the creek would be negligible.

Under this alternative, an unimproved trail would be designated south of the cliff dwelling. Design of the trail would require some selective removal of tree limbs or brushy material to mark the trail. The understory of the riparian area is primarily nonnative grasses. The understory vegetation would not be removed from the trail, so there would be no increase in the area not covered by vegetation. Potential adverse impacts could be reduced by designing the trail to avoid areas where the understory vegetation is sparse or more susceptible to disturbance and to avoid areas of uneven or unstable terrain. Because no understory vegetation would be removed for the trail, the potential for short-term, adverse impacts on water flow through the riparian area would be negligible.

There could be some adverse impact to understory vegetation from visitor use of the trail. Potential impacts include a decrease in the amount of understory vegetation along the trail, which could change water flow through the area, causing local scouring along the trail and increased erosion. The understory vegetation is quite hardy and adapted to disturbance. Visitor use would be local and not continuous, thereby reducing the potential impacts to the understory. Visitor use levels are anticipated to be modest, so some vegetation loss could occur here, but only during the dry season. The vegetation would be expected to recover in the wet season when the trail is closed. Consequently, any loss in vegetation would be local and temporary. The long-term, adverse impacts from a potential increase in erosion associated with a decrease in vegetative cover would be negligible. The long-term impacts of the trail on erosion and water flow patterns in the floodplain would also be negligible.

The preferred alternative does not include any additional management actions in the

floodplains of Wet Beaver Creek at Montezuma Well. There would be no short- or long-term impacts on the floodplain at the well from actions proposed in this alternative. The impacts of alternative B on the floodplain processes at Wet Beaver Creek would continue to be adverse but negligible in the long term (same as alternative A).

Tuzigoot National Monument. Actions proposed under this alternative include of improvement of trails along the riparian area near the Verde River and Tavaschi Marsh, providing visitors the opportunity to experience both these resources. Trail improvement would require some selective removal of tree limbs or brushy material to mark the trail. The understory vegetation would not be removed and, as now, ground vegetation would be mowed along existing alignments, so there would be no increase in erosion potential in the floodplain. Potential adverse impacts could be reduced by designing the trail to avoid areas where the understory vegetation is sparse or more susceptible to disturbance and to avoid areas of uneven or unstable terrain. Because trail design would not involve clearing vegetation, the short-term, adverse impacts of the trails on the erosion potential in the floodplain or the capability of the floodplain to convey flood waters would be negligible.

The impacts of visitor use of the trail on the Tuzigoot National Monument floodplain would be similar to those described at Montezuma Castle National Monument. The short- and long-term adverse impacts on erosion potential in the floodplain would be negligible.

A boardwalk into the Tavaschi Marsh would provide visitors an opportunity to experience the marsh as well as to provide education and interpretation of the marsh resource under this alternative. The boardwalk would extend into the marsh on pilings and, if assessment determines that there would be no conflict with preservation of significant cultural resources,

would be aligned along an old road bed. The pilings would be spaced such that they would not act as a barrier to water flow in the marsh nor would they change existing flow patterns. The construction and use of the boardwalk would not increase erosion in the floodplain or decrease the capability of the floodplain to convey flood waters. The potential for short- and long-term adverse impacts from development of a boardwalk in the marsh on water flow, erosion, or the capacity of the floodplain to convey flood waters would be negligible.

Cumulative Impacts. There are no past, present, or reasonably foreseeable future actions outside Montezuma Castle National Monument that would contribute to the height of a flood along the creek or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. Consequently, there would be no cumulative impacts on floodplains under alternative B at Montezuma Castle National Monument.

At Tuzigoot National Monument, the Verde River Greenway Master Plan, as described under alternative A, would not add any impervious surface to the floodplain. This action would not contribute to the height of a flood along the river or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. The presence of a formalized trail could reduce the number of social trails along the creek. This trail would reduce the erosion potential along the entire corridor, providing a long-term benefit.

The trail proposed along the riparian area at Tuzigoot National Monument could link to the trail proposed in the Verde River Greenway Master Plan. Visitor use could increase along the trail in the monument once the trails are connected. Increased use of the trail in the monument could result in greater potential for erosion along the trail because of vegetation loss. Vegetation loss could be reduced through best management practices dur-

ing trail maintenance, thus decreasing the erosion potential. The long-term, adverse, cumulative impact of the linked trails on erosion resulting from vegetation loss would be negligible to minor. There would also be beneficial, cumulative impacts as a result of reduced social trailing. Overall, alternative B would have a negligible to minor, adverse, cumulative effect on floodplains at Tuzigoot National Monument.

Conclusion. Alternative B would not contribute to the height of a flood along the creek or adversely impact the ability of the floodplain to convey floodwaters within the river corridor for all three sites of the monument. Visitor use of trails could increase the potential for erosion because of the associated loss of vegetative cover. The long-term, adverse, cumulative impact of a new trail system on erosion resulting from vegetation loss would be negligible to minor.

Construction and use of a boardwalk at Tavaschi Marsh in Tuzigoot National Monument would have long-term, adverse, negligible impacts on water flow and erosion in the marsh. There would be no cumulative impacts under alternative B at Montezuma Castle National Monument. At Tuzigoot National Monument, alternative B would have a negligible to minor, adverse, cumulative effect on floodplains.

These effects would not constitute an impairment of floodplain resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Soils and Vegetation

Montezuma Castle National Monument. Under this alternative, an existing trail would be improved within the riparian area across Beaver Creek from Montezuma Castle. The vegetation in the riparian area is characterized by scattered

trees and shrubs with a dense understory of grasses and flowering plants. Trail improvement would require some selective removal of tree limbs or brushy material to mark the trail. These actions would have a negligible, short-term, adverse impact on the distribution or abundance of vegetation in the riparian area. There could be some adverse impacts to the understory vegetation from visitor use of the trail. However, because the understory vegetation is dense and composed of hardy species, the long-term, adverse impacts on vegetation from use of the trail would be negligible. The Riverwash soils that underlie the riparian area were compacted as a result of agricultural uses, particularly grazing. Use of the trail is unlikely to have any additional adverse impacts on soil productivity because the existing vegetative cover would remain in place. With the vegetation in place, it is unlikely that the Riverwash soil would be further compacted during low-intensity, seasonal use of the trail. The long-term, adverse impacts on soils from the trail would be negligible.

While it is unlikely that the trail would substantially alter the abundance and distribution of plant species in the riparian area, additional long-term measures to control the nonnative and exotic species would be necessary to maintain a diverse plant community and the desirability of the habitat for wildlife. Disturbances caused by visitor use of the trail could encourage growth of nonnative and exotic species and over time could reduce the abundance and distribution of native species along the trail. In the short term, adverse impacts to native vegetation could be reduced by designing a route that minimizes disturbances that could encourage the growth of nonnative and exotic species to the extent practicable. The short-term, adverse impacts of the trail on the abundance and distribution of native vegetation would be negligible. Ongoing trail maintenance and management of the nonnative and exotic species would re-

duce the long-term, adverse impacts of the trail on native plants. The long-term, adverse impacts of the trail designation on abundance and distribution of native vegetation would be negligible.

There would be a designated trail into the area that was formerly used as pasture land southwest of the picnic area at Montezuma Well. The soil type in the former pasture is unlikely to limit trail designation. Nonnative and exotic species are dominant in the old pasture, and the National Park Service has not undertaken an effort to return this area to native vegetation. Therefore, trail construction activities would have a negligible effect on native plants.

The current visitor contact station would be expanded and would include a shaded area with interpretive materials about Montezuma Well, and new work space and storage would be constructed under this alternative. The expansion of facilities would occur into areas that have already been disturbed and/or are currently covered by asphalt. There would be no additional loss of soil productivity under this alternative. There could be an increase in erosion potential if the existing asphalt surface is modified during the expansion activities. The erosion potential could be mitigated through best management practices such that the short-term adverse impact is negligible. Once development activities are completed, the long-term erosion potential associated with the expanded facilities would be comparable to existing conditions. The long-term, adverse impacts on soil erosion from the expansion of facilities would be negligible.

There would be no additional impacts on vegetation at the monument from the proposed expansion of the visitor contact station. The proposed development activities would occur in an area that is already covered by an impervious surface. During construction, some minimal impacts could occur to vegetation on the periphery of the expansion area. These impacts would

be short-term, adverse, and negligible. Any long-term, adverse impacts to vegetation would be negligible.

Tuzigoot National Monument. Under this alternative, there would be designated trails around Tavaschi Marsh and through the Verde River riparian area. Trail development would require some selective removal of tree limbs or brushy material to mark the trail, but the understory vegetation would not be removed. The short-term, adverse impacts of trail development on vegetation at Tuzigoot National Monument would be negligible because any change in the distribution or abundance of individual plants or communities would not be measurable. Similarly, because no clearing would occur, the short-term, adverse impacts on soil from increased erosion would be negligible.

The understory vegetation would be subject to disturbance from visitor use; the disturbance is expected to be year round but modest and local. Visitor use could reduce the amount of understory vegetation on the trail, which would increase the potential for soil erosion along the trail. The trail design could reduce potential adverse impacts on vegetation and soil by avoiding areas where the understory vegetation is sparse or more susceptible to disturbance and by avoiding areas of uneven or unstable terrain. Best management practices during trail maintenance could reduce losses to the understory vegetation and decrease soil erosion. The long-term impacts of the trail on the understory vegetation would be negligible, as would the long-term, adverse impacts of soil erosion.

Trail use by visitors, even with best management practices, disturbs the vegetation and encourages the growth of nonnative and exotic species. Over time, these species could change the abundance and distribution of native species, resulting in changes to biological productivity in the monument. There are ongoing management actions to control nonnative and exotic species within the monument. The

long-term, adverse impacts of an increase in nonnative and exotic vegetation would be negligible to minor.

A boardwalk into the Tavaschi Marsh is proposed to provide visitors an opportunity to experience the marsh as well as to provide education and interpretation of the marsh resource. Soils would be disturbed during boardwalk construction, but the erosion potential would not increase and soil productivity would not be affected. Soil productivity would be impacted, but the effects would be local. The short- and long-term impact on soils would be adverse but negligible.

Impacts to marsh vegetation could be reduced during boardwalk construction by avoiding vegetation to the extent practicable. The short- and long-term adverse impacts on vegetation as a result of constructing the boardwalk would be negligible.

Cumulative Impacts. Increasing trends in visitor use and development associated with alternative B and other plans and projects would contribute negligible, long-term, adverse, cumulative effects on soils and vegetation.

At Tuzigoot National Monument, the Verde River Greenway Master Plan, as described previously, would have local impacts on soils and vegetation. These impacts would include an increase in erosion potential and the removal of some vegetation. The erosion potential could be reduced during trail development using best management practices that could include but not be limited to soil fencing. The short-term impacts of the trail development would be adverse but negligible. Trail maintenance activities, including the use of best management practices, would minimize the potential for erosion along the trail. The long-term, adverse impacts of the trail on soil erosion would be negligible. The impacts of alternative B on soils in combination with the impacts of the proposed greenway trail would result

in negligible, long-term, adverse, cumulative impacts on soils.

Although some vegetation would be removed, the impacts would be local and not likely to change the abundance and distribution of individual plants or communities. Therefore, the long-term, adverse impacts on vegetation from trail development would be negligible. If nonnative or exotic species are present, management actions may be necessary to control the spread of these species once the ground has been disturbed to minimize any adverse impacts on native plants from trail development. The long-term, adverse impacts from nonnative and exotic species would be negligible. The impacts of alternative B in combination with the impacts of the proposed greenway trail would result in negligible, long-term, adverse, cumulative impacts on vegetation.

Conclusion: Montezuma Castle National Monument. The long-term, adverse impacts on soils from the trail would be negligible. Trail improvement would have a negligible, short-term, adverse impact on the distribution or abundance of vegetation in the riparian area.

The long-term, adverse impacts on soil erosion from the expansion of facilities would be negligible. During construction, some minimal impacts could occur to vegetation on the periphery of the expansion area. These impacts would be short-term, adverse, and negligible. Any long-term, adverse impacts on vegetation would be negligible.

Increasing trends in visitor use and development associated with alternative B and other plans and projects would contribute negligible, long-term, adverse, cumulative effects on soils and vegetation.

Alternative B would not constitute an impairment of resources or values associated with soil or vegetation at Montezuma Castle National Monument. Implementation of this alternative would not result in any

unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. The short-term, adverse impacts of trail development on vegetation at Tuzigoot National Monument would be negligible because any change the distribution or abundance of individual plants or communities would not be measurable. Similarly, because no clearing would occur, the short-term adverse impacts on soil from increased erosion would be negligible. The long-term, adverse impacts of an increase in nonnative and exotic vegetation would be negligible to minor.

Soils would be disturbed during boardwalk construction, but the erosion potential would not increase, and soil productivity would not be affected. Soil productivity would be impacted, but the effects would be local. The short- and long-term impacts on soils would be adverse but negligible. The short- and long-term adverse impacts on vegetation as a result of constructing the boardwalk would be negligible.

The impacts of alternative B on soils and vegetation, in combination with the impacts of the proposed greenway trail and increased visitation, would result in negligible, long-term, adverse, cumulative impacts on soils and vegetation.

Alternative B would not constitute an impairment of resources or values associated with soil or vegetation at Tuzigoot National Monument. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wetlands

There would be no actions at Montezuma Castle National Monument that would affect wetlands under alternative B.

Alternative B would include active marsh restoration activities to maintain existing

hydrologic functions in Tavasci Marsh at Tuzigoot National Monument. This would have a negligible to minor, long-term, beneficial effect on wetland habitat functions. Because no vegetation would be removed and there would be no change in volume and density of vegetation, the potential increase in sedimentation from soil erosion would be slight, and the short-term impacts from trail development on the marsh would be negligible. Over time, if vegetation is lost, the trails could increase sedimentation in the marsh. The impacts from such sedimentation could be mitigated using best management practices during long-term maintenance. The long-term impacts of the increased sedimentation on the marsh would be negligible.

A boardwalk into the Tavasci Marsh is proposed to provide visitors an opportunity to experience the marsh and to provide education and interpretation of the marsh resource. The boardwalk could have both short- and long-term impacts on habitat in the marsh. During construction, the potential adverse impacts on the marsh include wetland habitat disturbance. If assessment determines that there would be no conflict with preservation of significant cultural resources, the impacts from habitat disturbance could be reduced by siting the boardwalk along an existing road bed and where there is the least impact on areas used by species that frequent the marsh and to avoid shading the surrounding vegetation. With mitigation, the short- and long-term impacts on the marsh wetlands would be minor.

Cumulative Impacts. There are no past, present, or reasonably foreseeable actions outside Montezuma Castle National Monument that would adversely impact wetland functions or habitat there.

The Verde River Greenway Management Plan could develop trails and other infrastructure (for example, a boat ramp and parking lot), near Tavasci Marsh at Tuzigoot National Monument. These actions

would create additional visitor opportunities that, with increased use, could affect wetlands. However, the adverse effects of increased visitation or development associated with the Verde River Greenway Management Plan would likely be local and negligible, and the contribution of alternative B toward adverse, cumulative impacts on wetlands would also be negligible.

Conclusion. There would be no actions at Montezuma Castle National Monument that would affect wetlands under alternative B.

Active marsh restoration activities would have a negligible to minor, long-term, beneficial effect on wetland habitat functions at Tavaschi Marsh. Trail improvements around the marsh could increase sedimentation in the marsh. The long-term impacts of the increased sedimentation on the marsh would be negligible because of the abundance of grass coverage. Construction of the boardwalk could impact wetland habitat quality in the marsh. With mitigation, the short- and long-term impacts on the marsh wetlands would be negligible to minor. There would be no cumulative impacts on wetlands of alternative B at Montezuma Castle or Tuzigoot national monuments under this alternative.

The impacts of alternative B would not constitute an impairment of wetland resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wildlife

Montezuma Castle National Monument. There would be designated trails within the riparian area across Beaver Creek from the cliff dwelling. The trail would only be accessible during low flow

on Beaver Creek; typically between mid-summer and early winter. Wildlife breeding activities occur during the spring and summer, and foraging activity occurs year round.

Development of the trail could disturb some wildlife species and increase the potential for predation on species nesting in the riparian area by increasing predator access. The short-term, adverse impacts of trail development could be minimized by timing trail work to avoid high concentrations of wildlife in the riparian area to the extent practicable. The trail could also be designed to take advantage of naturally occurring open spaces and to avoid dense patches in the vegetation, thus minimizing alterations. These actions can minimize the creation of additional open spaces that could allow increased predation. Trail development would have a negligible to minor impact on wildlife and wildlife habitat. Some species would still be disturbed in the long term by visitors in the riparian area. The trail would be confined to a relatively small area, and the number of visitors on the trail is expected to be modest. Species would have ample undisturbed habitat remaining in the monument. Therefore, the long-term, adverse impacts of trail use on wildlife and their habitat would be negligible.

At Montezuma Well, a trail is proposed into the former pasture. Currently, the vegetation in the pasture is nonnative and exotic grasses with an increasing number of velvet mesquite. The primary residents of the old pasture are small mammals, some reptiles, and birds that over-winter at the monument. The designated trail would have the greatest impact on smaller mammals and reptiles. The trail route could be chosen to avoid any obvious ground dwellings as well as potential habitat for birds; the short-term impact of trail development would be negligible. Although some individuals could be impacted by the trail, the long-term, adverse impact would be negligible because it

would not reduce the abundance or distribution of any species within the pasture.

Tuzigoot National Monument.

A boardwalk into Tavaschi Marsh would be developed under this alternative. The boardwalk has the potential to disturb habitat for water birds and other species. The adverse impacts on wildlife could be minimized by choosing a location, such as along the existing old road bed (if assessment determines that there would be no conflict with preservation of significant cultural resources), with the least impact on habitat and by timing construction to minimize impacts on breeding and rearing. The short-term, adverse impacts on wildlife from construction of the boardwalk would be negligible to minor. Some species could be disturbed by the boardwalk and the presence of visitors. The adverse impacts on these species would be minimized by assuring that sufficient suitable habitat remains for these species within the marsh away from the boardwalk. The long-term, adverse impacts on wildlife species that are especially sensitive to disturbance would be negligible to minor, while for the more common adaptable species, the effects would be negligible.

Boardwalk construction activities would increase the amount of contaminated sediment in the water column. The contaminants can accumulate in the tissues of the wildlife that live in the marsh. Over time, wildlife exposed to these contaminants can have reduced reproductive success. To limit the amount of contaminated sediment in the water column, the construction of the boardwalk could be timed such that the water level is relatively low. Sediment fences could be installed to keep the disturbed sediment from spreading over a wider area. The long-term, adverse impacts on the habitat characteristics of the marsh would be negligible to minor, depending on the level of exposure to the contaminated sediment.

Although the presence of visitors could disturb some species, the trail would be

designated along the edge of the riparian area, rather than through it; thus, the trail would be unlikely to increase opportunities for predators. The trail would be confined to a relatively small area, and the number of visitors on the trail is expected to be modest. Species that are easily disturbed would have ample undisturbed habitat remaining in the monument. Therefore, the long-term, adverse impacts on wildlife and their habitat would be negligible.

Cumulative Impacts. Past, present, or reasonably foreseeable actions at Montezuma Castle National Monument, including alternative B, would have a negligible effect on wildlife or wildlife habitats at the monument. The effects would be associated with increased visitation and visitor interaction with wildlife habitats. As a result, cumulative adverse impacts under alternative B on wildlife or wildlife habitat would be negligible.

At Tuzigoot National Monument, the Verde River Greenway Master Plan, as described previously, would have local impacts on wildlife habitat within the monument along the Verde River. Although these impacts would include disturbance that could limit foraging activity or adversely impact nesting, they could be reduced by timing trail development to avoid the breeding season. The long-term impacts of the trail development would be adverse and negligible to minor but would be unlikely to affect wildlife individuals or populations to any substantial degree. The impacts of alternative B in combination with the impacts of the proposed greenway trail would result in negligible to minor, long-term, adverse, cumulative impacts on wildlife and wildlife habitat.

Conclusion. Trail construction would have a negligible to minor, short-term impact on wildlife and wildlife habitat. Species would have ample undisturbed habitat remaining in the monument. Therefore, the long-term, adverse impacts of

trail use on wildlife and their habitat would be negligible.

Although some individuals could be impacted by the proposed trail at Montezuma Well, the long-term, adverse impacts on wildlife would be negligible.

The short-term, adverse impacts on wildlife from construction of the boardwalk at Tavasci Marsh in Tuzigoot National Monument would be negligible. The long-term, adverse impacts to wildlife species that are especially sensitive to disturbance would be negligible to minor, while for most adaptable species, the effects would be negligible. The long-term, adverse impacts on the habitat characteristics of the marsh resulting from disturbance of contaminated sediment in the marsh would be negligible to minor, depending on the level of exposure to the contaminated sediment.

The trail at Tavasci Marsh would be confined to a relatively small area, and the number of visitors on the trail is expected to be modest. Species that are easily disturbed would have ample undisturbed habitat remaining in the monument. Therefore, the long-term, adverse impacts on wildlife and their habitat would be negligible.

Cumulative adverse impacts under alternative B on wildlife or wildlife habitat would be negligible at Montezuma Castle National Monument. The impacts of alternative B in combination with the impacts of the proposed greenway trail would result in negligible to minor, long-term, adverse, cumulative impacts on wildlife and wildlife habitat at Tuzigoot National Monument.

The actions proposed under alternative B would not constitute an impairment of wildlife or wildlife habitat resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Threatened and Endangered Species

Southwestern Willow Flycatcher. There could be greater impacts on southwestern willow flycatcher habitat at Montezuma Castle and Tuzigoot national monuments under alternative B than under alternative A. The increased potential for impacts results in part from designated trails that would be established at each site. The trail routes have not yet been determined. The designated trail routes would be designed to have the least effect on suitable flycatcher habitat. In addition, the National Park Service would consider use restrictions for some trails to minimize habitat disturbances. These restrictions could include limited access during breeding season or during periods of key activity such as migration. Prior to initiating actions that would affect the southwestern willow flycatcher or its habitat, the National Park Service would complete additional environmental compliance activities and consult with the U.S. Fish and Wildlife Service as appropriate.

Montezuma Castle National Monument. Under alternative B, the management efforts to maintain suitable foraging habitat for the flycatcher in the monument would continue. These actions would affect flycatcher habitat, but the effects are not likely to be adverse.

Because flycatchers are migratory, development of the trail in the riparian area across Beaver Creek could occur when flycatchers are not at the monument. Trail development could involve trimming vegetation, but no vegetation would be cleared. The trail route would be chosen to minimize impacts on preferred flycatcher habitat in the riparian area to the extent practicable. There would be no short- or long-term effects on flycatcher habitat in the riparian area from trail development.

Because flycatchers are shy, visitor use of the trail could discourage the flycatchers

from foraging around the trail while visitors are present. Because the proposed trail would be relatively short, the adverse effects of visitors on the trail would be local, leaving most of the riparian area in the monument undisturbed. Additional management actions could be taken to further reduce the long-term adverse effects of trail use, including but not limited to use restrictions during breeding season. Long-term trail use could affect flycatcher foraging activity at Montezuma Castle National Monument, but the effect is unlikely to be adverse.

Tuzigoot National Monument. Active marsh restoration activities are proposed to maintain natural hydrologic functions in Tavaschi Marsh under alternative B. These actions would support maintenance of existing vegetation in the marsh and the surrounding riparian area. Flycatchers use these areas to forage. Marsh restoration activities would have long-term benefits on flycatcher foraging habitat; thus, no adverse effects would occur.

Trails would be developed to and around the riparian areas, and a boardwalk would be developed into Tavaschi Marsh under this alternative. The short-term effects of trail development at Tuzigoot National Monument would be the same as for the trail at Montezuma Castle; that is, no effects on habitat in the riparian area in the short or long term. If trail use would have an adverse impact on foraging behavior, management actions could be implemented to reduce these effects, including limiting access on the trail during certain times of year or during periods of key activity. Visitor use of the trails and the boardwalk could have long-term effects on flycatcher foraging habitat, but the effects are not likely to be adverse.

Cumulative Impacts. There is a documented nesting site for southwestern willow flycatcher just outside the monument boundaries in the riparian area of the Verde River. Ditch maintenance activities in the area help maintain the conditions

that the flycatcher favors when nesting. The ongoing ditch maintenance activities would continue to benefit flycatcher habitat in a negligible to minor way.

At Tuzigoot National Monument, the Verde River Greenway Master Plan, as described previously, would contribute to cumulative effects. In addition, a small parking lot and boat launch is proposed by Arizona State Parks on the east side of the monument entrance road. This development would be outside the monument boundary but would require modifications to the existing roadway. The proposed location of the boat launch is within designated critical habitat for the flycatcher, and vegetation in the vicinity has been used for nesting. Increased activity could disturb the flycatcher and discourage continued use of the area for nesting.

The National Park Service would work with Arizona State Parks to minimize potential adverse impacts associated with the Greenway Master Plan trail. The effects of the boat launch could be reduced by shifting visitor activity on the river away from the patch of vegetation that serves as nesting habitat. In addition, any trail development would avoid creating new or longer edges along a nesting patch that could make the nests more vulnerable to predation. The proposed trail could have long-term effects on the nesting habitat for the flycatcher along the Verde River, but these effects are unlikely to be adverse. The effects of alternative B in combination with the effects of the other actions described above could affect flycatcher habitat; however, the cumulative effects would not likely be adverse as a result of mitigation measures and adaptive management strategies.

Conclusion. There could be greater impacts on southwestern willow flycatcher habitat at Montezuma Castle and Tuzigoot national monuments under alternative B than under alternative A. Management efforts to maintain suitable foraging habitat for the flycatcher in Montezuma

Castle and Tuzigoot national monuments would continue. These actions would affect flycatcher habitat, but the effects would not likely be adverse.

The trail route would be chosen to minimize impacts on preferred flycatcher habitat in the riparian area to the extent practicable. There would be no short- or long-term effects on flycatcher habitat in the riparian area from trail development.

Additional management actions could be taken to further reduce the long-term, adverse effects of trail use. These actions include but would not be limited to use restrictions during breeding season. Long-term trail use could affect flycatcher foraging activity at Montezuma Castle National Monument, but the effect would likely not be adverse.

Marsh restoration activities at Tuzigoot National Monument would have long-term, negligible to minor benefits on flycatcher foraging habitat.

If trail use has an adverse impact on foraging behavior, management actions could be implemented to reduce these effects, including limiting access on the trail during certain times of year or during periods of key activity. Visitor use of the trails and the boardwalk could have long-term effects on flycatcher foraging habitat, but the effects are not likely to be adverse.

The ongoing ditch maintenance activities would continue to provide negligible to minor, cumulative benefits on flycatcher habitat.

The effects of alternative B in combination with the effects of the other actions at Tuzigoot National Monument could affect flycatcher habitat; however, the cumulative effects would not likely be adverse as a result of mitigation measures and adaptive management strategies.

Yuma Clapper Rail. Active marsh restoration activities are proposed to maintain natural hydrologic functions in Tavasci

Marsh under alternative B. This would maintain the current wet conditions in the lower sections of the marsh. Marsh restoration activities would have a long-term, negligible to minor benefit on rail habitat.

Development of a boardwalk could affect clapper rail habitat and increase the short-term potential for exposure to selenium by disturbing sediment and thus increasing selenium concentrations. The effects of the boardwalk on rail habitat would be reduced by choosing a site that meets the interpretation objectives of the monument with the least impact on the lower portion of the marsh. The effects could be further reduced by timing construction so that the clapper rail is absent following migration. This timing would reduce the potential for direct exposure to selenium but not indirect exposure through food. Additional mitigation measures could include actions to prevent movement of the sediment away from the construction area and to reduce the quantity of sediment in the water column during construction. These measures would reduce the potential for exposure to selenium by organisms in the marsh and ultimately the clapper rail. Development of the boardwalk would have a short-term effect on water quality and habitat in the marsh, and the effects are unlikely to be adverse. Exposure to selenium in the marsh could affect, but is not likely to adversely affect, the long-term reproductive success of the clapper rails that use the marsh to forage during migration.

Cumulative Impacts. There are no past, present, or proposed monument actions other than alternative B that would affect the Yuma clapper rail or its habitat at Montezuma Castle National Monument.

The Verde River Greenway Management Plan could develop trails and other infrastructure (for example, a boat ramp and parking lot), near Tavasci Marsh at Tuzigoot National Monument. These actions would create additional visitor opportunities that with increased use could affect

the Yuma clapper rail. However, the adverse effects of increased visitation or development associated with the Verde River Greenway Management Plan would likely be local and negligible contributors to adverse, cumulative impacts on the rail.

Conclusion. Marsh restoration activities would affect rail habitat, but the effect would not be adverse because of mitigation to minimize the effects. In the long-term, marsh restoration would provide a negligible to minor benefit on rail habitat.

Development of the boardwalk would have negligible effect on habitat in the marsh with potential to affect the clapper rail. However, mitigation measures would offset the effects so they would not be adverse. The long-term effects on the clapper rail from exposure to selenium can be reduced by timing construction to avoid times when rails are present. With these mitigation measures, the development of the boardwalk would affect the clapper rail, but the effects would not likely be adverse. There would be no cumulative effects on clapper rails or their habitat under this alternative at Montezuma Castle, and although there could be cumulative effects at Tuzigoot, the effects on the Yuma clapper rail would not be adverse.

Yellow-billed Cuckoo. There are no proposed actions under this alternative that would affect the gallery riparian forest at Montezuma Castle National Monument. Because this species is difficult to disturb, the trail development activities and use could affect, but are unlikely to adversely affect, the cuckoo.

The effects of alternative B on cuckoo habitat at Montezuma Well are the same as for alternative A: not likely to be adverse. Current management of the gallery riparian forest would continue. These actions would not have an effect on the habitat used by the yellow-billed cuckoo for nesting and forage.

At Tuzigoot National Monument, unimproved trails are proposed along the edge

of the riparian area. Cottonwood trees are present in the riparian area. Trail development could be managed to avoid the cottonwood trees used by yellow-billed cuckoo for forage. The presence of visitors is unlikely to disturb foraging activity because these birds are not easily disturbed. Trail development and use at Tuzigoot National Monument could affect, but is unlikely to adversely affect, yellow-billed cuckoo foraging behavior.

Cumulative Impacts. Cumulative effects associated with increased visitation and visitor interaction with the habitats used by the yellow-billed cuckoo would be negligible at either of the monuments. The yellow-billed cuckoo is relatively tolerant of disturbance, and management of visitors and their activities would offset any potential adverse impacts.

Conclusion. Implementation of alternative B would have no effect on the yellow-billed cuckoo habitat in the monument. Trail development and use at Montezuma Castle and Tuzigoot could affect the cuckoo, but is unlikely to adversely affect yellow-billed cuckoo habitat or populations. Cumulative effects associated with this alternative would be negligible at each of the monuments.

The actions associated with alternative B would not constitute an impairment of threatened and endangered species resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

VISITOR USE AND EXPERIENCE

Visitor Experiences of Monument Resources

In alternative B, the three sites in the monuments would be connected with coordinated orientation and marketing via partnerships in the Verde Valley. This

coordinated orientation would encourage visitors to visit all three sites in the monuments as well as other sites in the region to get better acquainted with the resources and how they each tell, first-hand, a unique element of the prehistoric and historic stories associated with human settlement of the Verde Valley. The increased exposure of visitors to all three sites in the monuments would be a long-term, moderate, beneficial effect on the visitor experience.

This alternative also emphasizes increased access to water and related riparian areas to showcase the connections of human settlement of the Verde Valley to the natural environment. At each site, trails would make the riparian areas accessible to visitors. Visitors at Montezuma Castle would be able to cross Beaver Creek and gain views back to the castle with the creek in the foreground. Natural surface trails along the south side of the creek would provide a different hiking experience for visitors, including opportunities for self-exploration, providing better understanding of the importance of riparian and water resources to the history of the Sinagua. This opportunity was highly desired by the public during the general management plan scoping process as well as by visitors that responded to the visitor survey; therefore, trail opportunities to and along Beaver Creek would be considered a long-term, major, beneficial impact.

Also at the Castle, additional parking is proposed to alleviate some of the congestion from peak use by automobiles and tour buses. During peak season, when impacts from high volumes of vehicles are greatest, this increased supply of parking would be a long-term, moderate, beneficial effect.

Finally, a regional multi-use trail is proposed along Montezuma Castle Highway at the north end of the monument. Local trail groups desired this trail to connect a regional trail that extends through the Verde Valley, providing a long-term, ma-

jor benefit to local and regional residents interested in regional trail opportunities.

Visitors at Montezuma Well would be able to take a trail across historic farming land to access Beaver Creek. This area is known for its outstanding birding opportunities and shaded river banks, providing a cool and quiet escape for visitors. Trail opportunities to Beaver Creek were also highly desired by the public and visitor survey respondents, making this a long-term, major, beneficial effect on the visitor experience.

At Tuzigoot, trails would connect the monument to Dead Horse Ranch State Park, the Verde River Greenway, and Coconino National Forest via a boardwalk and trail system in Tavaschi Marsh. The marsh is known for its outstanding birding opportunities and shaded marshlands, providing a cool and quiet escape for visitors. Trail opportunities to Tavaschi Marsh and surrounding public lands were also desired by the public and survey respondents, making this a long-term, major, beneficial impact.

Also, in partnership with Arizona State Parks, the National Park Service would provide a Verde River access point in the Verde River Greenway, increasing recreation opportunities and access to the highly desirable Verde River. This would be a long-term, moderate, beneficial effect for visitors to Tuzigoot National Monument and Dead Horse Ranch State Park, as well as residents of the surrounding community.

This alternative would also provide increased opportunities for cultural demonstrations of craftsmanship and social activities in and around the Tuzigoot Pueblo. Paved trails south of the pueblo would provide access to the river. Signage and programs in this area would interpret prehistoric trade activities and farming that would have been associated with life in the pueblo. The visitor survey identified a strong interest for more “hands-on” activ-

ities, including demonstrations by modern affiliated tribes; therefore, this increase in interpretive programs and services would be considered a long-term, moderate benefit for visitors interested in these types of programs.

Finally, this alternative includes a monitoring and management program for user capacity. At all three sites, the monument staff would focus on specific monitoring and management of areas where action is most likely needed to achieve desired conditions. This program would help control impacts related to crowding, user conflict, human-caused noise, and resource damage, leading to a long-term, moderate, beneficial impact on visitor experiences.

Access to Orientation, Interpretation, and Education

In alternative B, the three sites in the monuments would be connected via coordinated orientation efforts throughout the Verde Valley. Partnerships for improved wayfinding, information dissemination, and marketing would connect the resources at all sites in the Verde Valley, resulting in a long-term, major, beneficial effect on interpretation and orientation opportunities.

This alternative calls for increased cultural demonstrations and programs at all three sites, which are highly desired by the public, resulting in a long-term, moderate benefit for those visitors seeking more education opportunities.

This alternative also includes new interpretive opportunities based out of the Back cabin at Montezuma Well. The interpretive programs would emphasize prehistoric and historic farming activities. More formalized and consistent interpretive opportunities were desired by the public as well as visitors who responded to the visitor survey; therefore, the new opportunities at the Back cabin are considered a long-term, moderate benefit for visitors.

Also at Montezuma Well, a visitor contact ramada with interpretive panels and staff would be provided. Currently, orientation and interpretation at Montezuma Well is minimal because of a lack of facilities and staff resources. The visitor contact ramada would provide more information for self-guided opportunities as well as a location for focused attention by monument staff. The ramada would also provide a shady spot for rest during the hot months. More orientation and interpretive information is considered a long-term, major benefit for all visitors.

Visitor Safety

Safety information would continue to be available at all three sites. At the Castle, additional parking would minimize the crowded conditions that sometimes occur during peak hours, increasing both perceived and actual visitor safety during visitors' arrival. At Montezuma Well, the expanded visitor contact station would improve dissemination of orientation information on safety factors, which may reduce unsafe incidents. Finally, at Tuzigoot, designating trails in areas that are currently being explored by visitors may reduce safety hazards. These improvements would result in a long-term, minor, beneficial impact on visitor safety.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on the visitor experience at all three sites related to alternative B. First, at Montezuma Castle, the proposed Yavapai-Apache Nation Native American Cultural Center would likely have a long-term, moderate, beneficial effect on interpretation and education opportunities related to the cultural history of the region. In this alternative, the coordinated orientation in the Verde Valley and the Castle's existing visitor center would complement the new education and interpretive opportunities provided at the cultural center, enhancing the long-term, beneficial impacts. The cultural cen-

ter would also likely attract visitors to the area and may increase visitation to the Castle. Alternative B includes an expansion of the parking area at the Castle, which would help mitigate crowded conditions. Furthermore, this alternative includes monitoring visitor use, particularly crowded conditions in the parking area, visitor center, and along the loop trail, which would allow the monument to work cooperatively with the tribe to manage the distribution of use between the cultural center and Castle. Finally, the regional multi-use trail proposed along Montezuma Castle Highway would represent a moderate, cumulative, beneficial effect on recreation opportunities in the region. This alternative would connect the regional trail through the monument, which would result in a long-term, beneficial effect on this proposed recreation opportunity.

At Montezuma Well, surrounding development projects could have an adverse impact on visitor experiences by increasing visitation to Montezuma Well, with a minor to moderate, adverse effect on the contemplative experiences at the outlet, along the trails, and in the picnic area. Also, these developments may have a minor, adverse impact on the scenic viewsheds of Montezuma Well. Alternative B includes more trail opportunities in Montezuma Well, which may help distribute use and improve recreation opportunities. In addition, this alternative includes a monitoring program of use levels and visitor experiences, so if increasing use results in adverse impacts on the quiet and contemplative settings, the monument would take actions to better manage and distribute use to mitigate these impacts. There are no proposals in alternative B that would mitigate the potential impacts to the viewsheds from these surrounding developments.

At Tuzigoot, the camping and reservoir improvements at Dead Horse Ranch State Park would likely increase the desirability

of the state park for day and overnight use. As more people visit the state park, there would likely be an increased demand for trail connections to Tuzigoot. This alternative proposes trail connections between the monument and the park, leading to a long-term, moderate, cumulative, beneficial impact. Further, the proposed recreation opportunities of the Verde River Greenway, which runs along the southern boundary of Tuzigoot, would enhance recreation opportunities for Tuzigoot visitors. Alternative B contributes to the moderate cumulative benefits of the Verde River Greenway by providing a Verde River access point in the Verde River Greenway, increasing recreation opportunities and access to the highly desirable Verde River. Finally, the restoration of the mine tailings by Freeport McMoRan Copper and Gold, Inc., particularly covering of the tailings with topsoil to promote vegetation growth, would likely have a major beneficial impact on visitor experiences at Tuzigoot by improving the scenic viewshed.

Finally, the proposed Sinaguan Circle Tour could enhance the interpretive opportunities at all three sites by connecting all of the Sinaguan sites in the region via an interpretive, self-guided tour with associated resource materials. Alternative B would contribute to this moderate to major, beneficial impact by providing increased diversity in opportunities to view and learn about the monuments' prime cultural resources, and through enhanced interpretation of the Sinaguan story at the central orientation center.

Conclusion

Alternative B would result in moderate to major, beneficial effects resulting from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources. Particularly, connecting the three sites in the monuments via a central orientation facility in the Verde Valley would increase exposure

of visitors to all three sites and provide a better understanding of each site's unique role in settlement of the Verde Valley. Further, providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting, and inviting for repeat visitation. Cumulative effects on visitor use and experience would be beneficial and moderate to major.

MONUMENT OPERATIONS

The primary emphasis of alternative B would be to connect the three sites (Montezuma Castle, Montezuma Well, and Tuzigoot) with improved regional orientation to the Verde Valley area.

Montezuma Well

The area just south and west of the picnic area at Montezuma Well would be zoned Interaction and Discovery, providing natural surface trails for visitors to hike and explore the land that was used for historic farming activities. A shade ramada by the visitor contact station is proposed in the existing footprint of the parking lot near Montezuma Well. The facility would be a covered porch that contains interpretive panels and shaded space for interaction with NPS staff and volunteers. Interpretation and visitor contact would be improved with alternative B. Alternative B would result in a long-term, minor to moderate, beneficial effect on monument operations through the provision of additional onsite space for operations. Additional facilities would result in long-term, minor, adverse effects by increasing operation and maintenance demands.

Tuzigoot National Monument

Marsh rehabilitation and management efforts would be expanded at Tuzigoot. A new wayside would be added to the south of the tailings, and the tailings area would be outside the monument's legislated boundary. A marsh boardwalk would be added that connects the visitor center with the Tavasci Marsh. Trails would be

improved in the area east of the pueblo. Tuzigoot would have increased cultural demonstrations of craftsmanship and social activities in and around the pueblo. The area south of the Tuzigoot Pueblo would include trails to the river. A new workspace and storage facility would be constructed near the existing maintenance area to provide administrative space for the functions and operations of Tuzigoot, replacing offsite workspace and storage lost with the expiration of the General Services Administration lease with the Yavapai Apache reservation. While interpretation would be improved at Tuzigoot, there would still be no area designated there for group interpretation. The actions associated with alternative B would result in long-term, negligible to minor, beneficial effects on monument operations through improved management of visitors and improved operations space. Additional facilities would result in long-term, minor, adverse effects by increasing operation and maintenance demands.

All Sites

The main emphasis of alternative B is to connect the three sites with improved regional orientation to the Verde Valley area. Visitors would be introduced to all three sites and their related interpretive themes through coordinated messaging among the three sites. Visitors would travel to the sites to learn firsthand about elements of the prehistoric and historic stories associated with human settlement of the Verde Valley. Each site would maintain a visitor center that would provide interpretation through signs, programs, and cultural demonstrations highlighting the major themes associated with the particular site. This could result in the need for additional personnel to provide this level of interpretation. Formal interpretive and education opportunities would be expanded. Partnerships that focus on coordinated wayfinding, marketing, increased information dissemination, and pre-trip planning services would increase

to provide orientation to the sites and other opportunities in the Verde Valley. Visitation could also increase because of greater awareness of the monuments.

Resource management activities would be increased through expansion of the monuments' resource stabilization program and active participation in the NPS inventory and monitoring program. The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings in Tuzigoot. Operational efficiency would be improved through the development of workspace and storage among the three sites. Partners would be sought to support rehabilitation activities and programming/visitor services. Maintenance would become more efficient, although the improvements would require additional maintenance. The monument headquarters would remain in leased office space in Camp Verde.

Assuming that the workforce increases to accommodate the increased interpretive and maintenance responsibilities, alternative B would result in long-term, minor to moderate, beneficial effects on monument operations.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on monument operations. The other plans, projects, and actions in the region and nearby would have effects similar to those described for alternative A: long-term, minor, adverse, cumulative effects on monument operations, primarily the result of increased visitation and demand for associated support services. However, alternative B would contribute long-term, minor, beneficial effects on monument operations, resulting in cumulative, negligible to minor benefits for monument operations.

Conclusion

Implementation of alternative B would result in long-term, minor to moderate, beneficial effects on monument operations because it would provide increased, improved space for monument operations, and improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due the addition of facilities that would require increased operations and maintenance. Alternative B would contribute long-term, minor beneficial effects on monument operations, resulting in cumulative, negligible to minor benefits for monument operations.

SOCIOECONOMICS

All Sites

The main emphasis of this alternative is to connect the three sites with improved regional orientation to the Verde Valley area. Visitors would be introduced to all three sites and their related interpretive themes through coordinated messaging among the three sites. Each site would maintain a visitor center that would provide interpretation through signs, programs, and cultural demonstrations highlighting the major themes associated with the particular site. The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings in Tuzigoot. This would include approximately 800 acres of land that would be withdrawn from the local tax rolls, which would reduce the property taxes collected by the local governments, resulting in a negligible, adverse impact on local socioeconomics.

Overall, alternative B would result in short-term, negligible to minor, beneficial effects on socioeconomics.

Montezuma Castle National Monument

New trails would be constructed on the site. A new viewing area that provides visi-

tors with views of the cliff dwellings would be constructed along with a parking facility. The remainder of the facilities at Montezuma Castle would remain the same as alternative A. This construction activity associated with alternative B at Montezuma Castle would result in short-term, negligible to minor, beneficial effects on socioeconomics.

Montezuma Well

The Back cabin at Montezuma Well would be used for interpretation purposes. Trails would be constructed in the area just south and west of the picnic area at Montezuma Well and a shade ramada that contains interpretive panels and shaded space for interaction with NPS staff and volunteers would be constructed in the existing footprint of the parking lot near Montezuma Well. This construction activity associated with alternative B at Montezuma Well would result in short-term, negligible, beneficial effects on socioeconomics.

Tuzigoot National Monument

A marsh boardwalk would be added that connects the visitor center with the Tavas-ci Marsh and additional trails would be constructed in the area east of the pueblo. A workspace and storage facility would be constructed near the existing maintenance area to provide more administrative space for the functions and operations of Tuzigoot, replacing offsite workspace and storage lost with the expiration of the General Services Administration lease with the Yavapai Apache reservation. This construction activity associated with alternative B would result in short-term, negligible, beneficial effects on socioeconomics at Tuzigoot National Monument.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on socioeconomics in the region. The effects of these projects would be the same as described for alternative A. The effects of alternative

B (negligible to minor benefits) in combination with the effects of other past, present, and reasonably foreseeable future actions would result in short- and long-term, minor, beneficial, cumulative effects on socioeconomics. Adjacent and surrounding land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.

Conclusion

When the effects of each of the sites of the monument are added, alternative B would result in a minor, short-term, beneficial effect on socioeconomics in the region. The effects of alternative B in combination with the effects of other past, present, and reasonably foreseeable future actions would result in short- and long-term, minor, beneficial cumulative effects on socioeconomics. Adjacent and surrounding land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.

IMPAIRMENT CONCLUSION FOR ALTERNATIVE B

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monument's establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monuments, or (3) identified as a goal in this general management plan or other relevant NPS planning documents.

Consequently, there would be no impairment of resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

IMPACTS OF IMPLEMENTING ALTERNATIVE C

CULTURAL RESOURCES

Archeological Resources

Montezuma Castle National Monument. Implementation of alternative C would generally have the same impacts on archeological resources in Montezuma Castle National Monument as those described under alternative A. Where possible, new facilities, such as trails, a headquarters building, and visitor contact facilities, would be constructed in already disturbed areas, and all ground-disturbing activities would be preceded by site-specific archeological surveys. However, actions under this alternative would generally expand opportunities for visitors to connect with the natural and cultural environment of the monument by providing new and enhanced self-guided, designated trails and visitor facilities. Thus, construction of new parking lots, headquarters and visitor contact facilities, and designated natural surface trails (for example, to and along the riparian area of Beaver Creek, the prehistoric ditch extending from Montezuma Well and along Beaver Creek, along the north side of Montezuma Well's rim, and along the road from the visitor contact facility to Montezuma Well) could result in negligible impacts to an unknown number of archeological resources from inadvertent use or looting and vandalism.

Tuzigoot National Monument. Implementation of this alternative would generally have the same impacts on archeological resources at Tuzigoot National Monument as those described under alternative A, although some additional negligible impacts on archeological resources from inadvertent visitor use and from looting and vandalism could be anticipated as a result of developing trail connections with nearby state and federal lands and construction of new facilities such as a proposed small parking area and boat launch

on the east side of the entrance road at the Verde River.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative C would generally have the same cumulative effects on archeological resources as those listed under alternative A, although expanded interpretation and education could improve visitor stewardship.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative C would generally have the same cumulative effects on archeological resources as those listed under alternative A, although expanded interpretation and education could improve visitor stewardship.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse*

effect on archeological resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with archeological resources. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Prehistoric and Historic Structures and Buildings

Montezuma Castle National Monument. Implementation of this alternative would generally have the same impacts on prehistoric and historic structures and buildings in Montezuma Castle National Monument as those described under alternative A.

Tuzigoot National Monument. Implementation of this alternative would generally have the same impacts on prehistoric and historic structures and buildings in Tuzigoot National Monument as those described under alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of this alternative would generally have the same cumulative effects on prehistoric and historic structures and buildings as those described under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of this alternative would generally have the same cumulative effects on prehistoric and historic structures and buildings as those described under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that

actions under this alternative would have *no adverse effect* on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on prehistoric and historic structures and buildings in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with prehistoric and historic structures and buildings. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Cultural Landscapes

Montezuma Castle National Monument. Implementation of this alternative would generally have the same impacts on cultural landscape resources in Montezuma Castle National Monument as those described under alternative A.

Tuzigoot National Monument. Implementation of this alternative would generally have the same impacts on cultural landscape resources in Tuzigoot National

Monument as those described under alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of this alternative would generally have the same cumulative effects on cultural landscape resources as those described under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of this alternative would generally have the same cumulative effects on cultural landscape resources as those described under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on cultural landscape resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would have *no adverse effect* on cultural landscape resources in the national monument. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with cultural landscapes. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Ethnographic Resources and Traditional Cultural Properties

Montezuma Castle National Monument. Implementation of alternative C would generally have the same impacts on ethnographic resources and traditional cultural properties in Montezuma Castle National Monument as those described under alternative A.

Tuzigoot National Monument. Implementation of alternative C would generally have the same impacts on ethnographic resources and traditional cultural properties in Tuzigoot National Monument as those described for alternative A.

Cumulative Effects: Montezuma Castle National Monument. Implementation of alternative C would generally have the same cumulative effects on ethnographic resources and traditional cultural properties as those described under alternative A.

Cumulative Effects: Tuzigoot National Monument. Implementation of alternative C would generally have the same cumulative effects on ethnographic resources and traditional cultural properties as those described under alternative A.

Conclusion: Montezuma Castle National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would *affect no historic properties* in the national monument. There would also be no impacts on ethnographic resources. The cumulative effects would be beneficial; this alter-

native's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with ethnographic resources or traditional cultural properties. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Conclusion: Tuzigoot National Monument. After applying the Advisory Council on Historic Preservation's regulations implementing section 106 of the National Historic Preservation Act, the National Park Service determined that actions under this alternative would *affect no historic properties* in the national monument. There also would be no impacts on ethnographic resources. The cumulative effects would be beneficial; this alternative's contribution to these effects would be small.

Under this alternative, there would be no impairment of resources or values associated with ethnographic resources or traditional cultural properties. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

NATURAL RESOURCES

Floodplains

Montezuma Castle National Monument. The impacts on the floodplain would be greater for this alternative than under alternative B. The greater impacts are associated with the development of a footbridge to convey visitors across Beaver Creek and a designated trail through the riparian area along the entire length of Beaver Creek within the monument boundaries.

The footings of the footbridge could change the local water flow characteristics, increasing sand deposition in some areas and causing erosion in others. The

footings would have a local impact on the contours of the creek bed. The bridge would be designed to minimize changes to water flow and erosion to mitigate these long-term impacts. Mitigation measures could include development of silt guards to encourage the flow of water and sediment around the footing of the bridge. The long-term adverse impacts of the footbridge on water flow characteristics and the contours of the creek bed would be minor. Aside from the impacts of the footings, the bridge would have minimal impacts on the floodplain. The structure would not impede the flow of water underneath it and so would not limit the ability of the floodplain to convey floodwaters nor would it cause an increase in flood height. Additional environmental compliance would be completed as necessary prior to development of the proposed bridge.

The type of impacts associated with trail development in the riparian area of Beaver Creek would be the same as for alternative B. The potential adverse impacts to the floodplain from erosion or changes in water flow patterns would be greater under this alternative because the proposed trail would run the length of Beaver Creek within the monument. The potential adverse impacts associated with the trail would no longer be localized and would require greater effort to reduce potential impacts, particularly in the long term. In the short term, the erosion potential could be reduced by designing the trail to avoid areas where the understory vegetation is sparse or more susceptible to disturbance and areas with uneven or unstable terrain. The potential erosion of the trail could be reduced in the long term by using best management practices during trail maintenance. These actions would also reduce the potential for changes in water flow patterns in the riparian area. The short-term adverse impacts of the trail on erosion and water flow patterns in the floodplain would be negligible to minor. The long-term impacts of the trail on erosion

and water flow patterns in the floodplain would also be negligible to minor.

Additional trails are proposed that include sections within the floodplain at Montezuma Well under alternative C. These trails would provide visitors with the opportunity to hike to and along the riparian area and from near the historic ditch to Montezuma Well and along Wet Beaver Creek. The trail segments along the riparian area and the creek would be in the floodplain, but these trails would not introduce an impervious surface. Hence, the actions would not raise the height of floodwaters in the floodplain, and the presence of the trail would not impede the ability of the floodplain to convey floodwaters within the river corridor.

There could be an increase in the erosion potential along the trails. In the short term, the erosion potential could be reduced by routing the trail away from slopes to the extent practicable and incorporating best management practices for trails as appropriate. In the long term, the erosion potential could be reduced using best management practices during trail maintenance activities. With these measures, the short- and long-term adverse impacts of erosion on the proposed trails in the floodplain would be negligible.

Tuzigoot National Monument. Actions proposed under this alternative are the same as those described for alternative B and would also include two additional trails that would use the existing roadbeds near the marsh if assessment determines that there would be no conflict with preservation of significant cultural resources. Under this alternative, trails would be developed along the riparian area near the Verde River and Tavaschi Marsh. Trail development would require some selective removal of tree limbs or brushy material to mark the trail. The understory vegetation would not be removed from the trail, so the only change in vegetative cover would be a result of visitor use. Trail use is expected to be low, with minimal loss of ve-

getation. Potential adverse impacts, such as increased erosion potential, could be reduced by designing the trail to avoid areas where the understory vegetation is sparse or more susceptible to disturbance and by avoiding areas of uneven or unstable terrain. Because trail development would not involve clearing vegetation, the short-term, adverse impacts of the trails on the erosion potential in the floodplain or the capability of the floodplain to convey flood waters would be negligible. Under this alternative, the two existing roadbeds that originate near the Visitor Center would be converted to trails. Both trails would allow the use of mountain bikes. The impact of using the existing roadbeds for trails would be negligible in the short term because no actions would be required to create the trail. In the long term, implementation of best management practices during maintenance would reduce the erosion potential associated from trail use. The long-term, adverse impacts on the floodplain from erosion associated with these new trails would be negligible.

There could be some adverse impacts on understory vegetation from visitor use of the trail. Potential impacts include a decrease in the amount of understory vegetation, which could increase the potential for erosion along the trail. The understory vegetation is quite hardy and adapted to disturbance. Visitor use would be modest and localized, reducing the potential impacts on the vegetation. Vegetation loss could be reduced through best management practices during trail maintenance, thus decreasing the erosion potential along the trail. The short- and long-term adverse impacts of the trail on erosion in the floodplain would be negligible.

A boardwalk into the Tavaschi Marsh would provide visitors with an opportunity to experience the marsh and would provide education and interpretation of the marsh resource. The boardwalk would extend into the marsh on pilings spaced such that they would neither act as a barrier to water flow in the marsh nor change

existing flow patterns. The construction and use of the boardwalk would not increase erosion in the floodplain or decrease the capability of the floodplain to convey flood waters. The potential for short- and long-term adverse impacts from development of a boardwalk in the marsh on water flow, erosion, or the capacity of the floodplain to convey flood waters would be negligible.

Cumulative Impacts. There are no past, present, or reasonably foreseeable future actions outside the Montezuma Castle National Monument that would contribute to the height of a flood along the creek or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. Consequently, there would be no cumulative impacts on floodplains under alternative C at Montezuma Castle National Monument.

At Tuzigoot National Monument, the Verde River Greenway Master Plan (Arizona State Parks 2004), as previously described, would not add any impervious surface to the floodplain and so would not contribute to the height of a flood along the river or adversely impact the ability of the floodplain to convey floodwaters within the river corridor. The presence of a formalized trail could reduce the number of social trails along the creek. This would reduce the erosion potential along the entire corridor and provide long-term benefits. The trail proposed along the riparian area at Tuzigoot could link to the trail proposed in the Verde River Greenway Master Plan. Visitor use could increase along the trail in the monument once the trails are connected. Increased use of the trail in the monument could result in greater potential for erosion along the trail because of vegetation loss, which could be reduced using best management practices during trail maintenance, decreasing the erosion potential along the trail in the monument. The long-term impact of the linked trails on erosion would be negligible to minor. Cumulatively, al-

ternative C would result in negligible, adverse impacts on the height of a flood along the creek, and the long-term erosion potential on the trail could increase to negligible to minor.

Conclusion. The impacts on the floodplain would be greater under alternative C, but implementation of the proposed actions would not contribute to the height of a flood along the creek or adversely impact the ability of the floodplain to convey floodwaters within the river corridor for all three sites of the monument. Visitor use of new trails designated at the Castle and Tuzigoot could increase the potential for erosion because of the associated loss of vegetative cover. With mitigation, the long-term adverse impacts would be negligible to minor at Montezuma Castle and negligible at Tuzigoot national monuments. Use of the existing roadbeds as trails in Tuzigoot National Monument would have a long-term adverse impact on the floodplain because of the potential for increased erosion of the trails, although the impact would be negligible. Construction and use of a boardwalk at Tavasci Marsh would have long-term adverse negligible impacts on water flow and erosion in the marsh. There would be no cumulative impacts under alternative C at Montezuma Castle National Monument. Alternative C would result in negligible adverse cumulative impacts at Tuzigoot National Monument. The erosion potential on the trail along the riparian area would minimally increase and be negligible to minor. Alternative C would not constitute an impairment of floodplain resources or values at Montezuma Castle and Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Soils and Vegetation

Montezuma Castle National Monument. There would be greater impacts to

both soils and vegetation under this alternative than under alternative B. The short-term impacts of trail development would be the same: adverse but negligible. However, because the trail in the riparian area would be substantially longer than the trail proposed under alternative B, the potential impacts to soils and vegetation could also be greater. Because visitor use of the trail is expected to be low and seasonal, the long-term, adverse impacts on the soil and vegetation would be negligible to minor.

Disturbances caused by visitor use of the trail could encourage growth of nonnative and exotic species and over time could reduce the abundance and distribution of native species around the trail. A reduction in native plant species could locally reduce habitat suitability for residents of the riparian area such as birds, insects, and amphibians. Because the trail would be substantially longer under this alternative, the impacts would be greater than under alternative B. In the short term, adverse impacts on native vegetation could be reduced by designating a route that avoids native vegetation and minimizes to the extent practicable disturbances that could encourage the growth of nonnative and exotic species. The short-term, adverse impacts from trail development on native vegetation would be negligible. Maintenance and management of nonnative and exotic species would reduce the long-term, adverse impacts of trail development on native plants. The long-term, adverse impacts of trail designation on abundance and distribution of native vegetation would be negligible.

This alternative includes two development projects: a new headquarters facility within the monument boundary and a paved road across the plateau above the cliff dwelling. The new headquarters building would be across from the overflow parking at the beginning of the entrance road.

The proposed location for the new headquarters building has been previously dis-

turbed. Construction of the new building would result in a local loss of soil productivity as well as an increase in soil erosion and clearing of vegetation. The loss in soil productivity cannot be mitigated, but the long-term adverse impacts would be minor because the effects would be limited to the developed area. The erosion potential can be mitigated using best management practices such that the short-term, adverse impacts would be negligible. With ongoing maintenance activities and revegetation, the long-term, adverse impacts from soil erosion around the new building would be negligible.

Development of the roadbed would require clearing a substantial area of all vegetation while creating a long edge of disturbed soil that nonnative or exotic species of plants could rapidly colonize. The short-term impacts of the road construction include increased erosion and changes in the flow of water over the land surface that would adversely impact soil productivity over a larger area.

Erosion could be controlled using best management practices during construction such that the short-term, adverse impacts would be negligible. Once the road is completed, changes to the soil productivity could extend beyond the roadbed because of changes in the flow of water over the landscape. Typically, water flows over the landscape as sheet flow. Once the road is complete, the sheet flow would change to channel flow along the edge of the roadbed. Without mitigation, the long-term potential for soil erosion would increase. Mitigation measures could decrease soil erosion but would not reduce the adverse impacts of runoff on soil productivity. Runoff from the roadway would spread hydrocarbons across the plateau. Over time, the buildup of hydrocarbons in the soil could decrease the diversity of plant species on the plateau and could possibly favor the more invasive or weedy species. Even with mitigation, the long-term adverse impacts on soil produc-

tivity and vegetation would be minor and local.

A smaller area of the old pasture at Montezuma Well would have designated unimproved trails under this alternative than under alternative B. In addition, an unimproved trail would be developed to and along the riparian area of Wet Beaver Creek and along the prehistoric ditch that extends from Montezuma Well to the creek. As with alternative B, the development of the unimproved trails would have short-term, negligible, adverse impacts on soil erosion, assuming mitigation measures were used. The greater impacts would be to the vegetative communities at Montezuma Well.

Because the area around Montezuma Well has historically been used for grazing, there are many nonnative and exotic species, particularly grasses. Development of the new trails would disturb a substantial amount of soil, which could contribute to the spread of nonnative grasses. Without mitigation, the trails could contribute to a decrease in the native plant species and composition of the plant communities at Montezuma Well. Management of the nonnative species would be required to control the spread of the nonnative species across a larger area. With mitigation, the long-term, adverse impacts on the vegetation at Montezuma Well could be minor to moderate.

A visitor center would be constructed near the Back cabin under this alternative. The proposed location has been heavily disturbed, and the dominant vegetation is nonnative grasses. Construction of the new building would result in localized loss of soil productivity as well as increased soil erosion. The loss in soil productivity cannot be mitigated, but the long-term adverse impacts would be minor because the effects would be limited to the developed area. The erosion potential can be mitigated using best management practices to keep the short-term adverse impact negligible. There could also be an increase

in nonnative and exotic vegetation because of the disturbance caused by the construction. This would cause a short-term, adverse, negligible impact on the surrounding vegetation because the landscape has already been disturbed and the dominant plant species are nonnative and exotic grasses.

Once construction is complete, the potential for soil erosion can be mitigated using best management practices and revegetation of the surrounding landscape. The long-term, adverse impacts on soil around the new visitor center from erosion would be negligible. Plant species used to revegetate around the new visitor center would be native. The long-term impacts of using native plant materials would be beneficial, local, and negligible.

Tuzigoot National Monument. A larger area of the monument would be zoned Interaction and Discovery than under alternative B. The expanded area allows for a greater number of designated but unimproved trails in the monument. The short-term, adverse impacts of trail development on vegetation at Tuzigoot would be negligible because any change in the distribution or abundance of individual plants or communities would not likely be measurable. Similarly, because no clearing would occur, the short-term, adverse impacts on soil from increased erosion would be negligible.

The long-term impacts would be greater under this alternative because of the greater area that would be impacted by the trail use. Visitor use could reduce the amount of understory vegetation on the trail, which would also increase the potential for soil erosion along the trail. Potential adverse impacts on vegetation and soil could be reduced by designing the trail to avoid areas where the understory vegetation is sparse or more susceptible to disturbance and to avoid areas of uneven or unstable terrain. Best management practices used during trail maintenance could reduce losses to the understory vegetation

and decrease soil erosion. The long-term, adverse impacts of the trail on the understory vegetation would be negligible to minor, as would the long-term, adverse impacts from soil erosion.

Trail use by visitors, even with best management practices, would disturb vegetation and encourage the growth of nonnative and exotic species. Over time, these species could change the abundance and distribution of native species, resulting in changes to biological productivity in the monument. There are ongoing management actions to control nonnative and exotic species within the monument. The long-term, adverse impacts of an increase in nonnative and exotic vegetation would be negligible to minor.

The Tavasci Marsh boardwalk would extend into the marsh on pilings. Soils would be disturbed during construction, but the erosion potential would not increase, and soil productivity would not be affected. The short-term impact on soils would be adverse but local and negligible. Once completed, the boardwalk would have a negligible, long-term, adverse impact on soil because the soil would not be disturbed and the erosion potential would not increase. Soil productivity would be adversely impacted, but the effects would be local and negligible.

Impacts on marsh vegetation could be reduced during boardwalk construction by avoiding vegetation to the extent practicable. The short-term, adverse impacts on vegetation during boardwalk construction would be negligible. The long-term, adverse impacts on vegetation could be reduced by designing the boardwalk to minimize shading of the surrounding vegetation. The long-term, adverse impacts on vegetation from the boardwalk would be negligible.

Cumulative Impacts. There are no past, present, or reasonably foreseeable actions outside Montezuma Castle National Monument that would impact soils or vegetation at the monuments. Consequently,

there would be no cumulative impacts under alternative C on soils or vegetation.

At Tuzigoot National Monument, the Verde River Greenway Master Plan (Arizona State Parks 2004), as previously described, would have local impacts on the soils and vegetation. These impacts would include an increase in erosion potential and the removal of some vegetation. The erosion potential could be reduced during trail development using best management practices that could include but would not be limited to silt fencing. The short-term, cumulative impacts of the trail development would be adverse but local and negligible. Trail maintenance activities, including best management practices, would help minimize the potential for erosion along the trail. The long-term, adverse impacts of the trail on soil erosion would be negligible. The impacts of alternative C on soils in combination with the impacts of the proposed greenway trail would result in negligible, long-term, adverse, cumulative impacts on soils.

Although some vegetation would be removed, the impacts would be local and not likely to change the abundance and distribution of individual plants or communities in the monument. Therefore, the long-term, adverse impacts on the vegetation from trail development would be negligible. If nonnative or exotic species are present, management actions may be necessary to control the spread of these species once the ground has been disturbed to minimize any adverse impacts on native plants from trail development. The long-term, adverse impacts from nonnative and exotic species would be negligible. The impacts of alternative C in combination with the impacts of the proposed greenway trail would result in negligible, long-term, adverse, cumulative impacts on vegetation.

Conclusion. There would be greater impacts on both soils and vegetation in the monuments under alternative C than under alternative B. The designated trail in

the riparian area at Montezuma Castle National Monument would be longer under this alternative; thus, the long-term, adverse impacts on the soil would be negligible to minor.

The short-term, adverse impacts from trail development on native vegetation would be negligible. Maintenance and management of nonnative and exotic species would reduce the long-term, adverse impacts of trail development on native plants. The long-term, adverse impacts of trail designation on abundance and distribution of native vegetation would be negligible.

Construction of the new building would result in a local loss of soil productivity as well as an increase in soil erosion and clearing of vegetation. The loss in soil productivity cannot be mitigated, but the long-term, adverse impacts would be minor because the effects would be limited to the developed area. With ongoing maintenance activities and revegetation, the long-term, adverse impacts from soil erosion around the new building would be negligible.

The short-term impacts of the road construction include increased erosion as well as changes in the flow of water over the land surface that would adversely impact soil productivity over a larger area. With mitigation, the long-term, adverse impacts on soil productivity and vegetation would be minor and local.

As with alternative B, the development of the unimproved trails would have short-term, negligible, adverse impacts on soil erosion, assuming mitigation measures were used.

Management of nonnative species would be required to control the spread of the nonnative species across a larger area at Montezuma Well following development of new trails. With mitigation, the long-term, adverse impact on the vegetation at the well could be minor to moderate.

Construction of the new visitor center near the Back cabin would result in a localized loss of soil productivity and an increase in soil erosion. The loss in soil productivity cannot be mitigated, but the long-term, adverse impacts would be minor because the effects would be limited to the developed area. This would be a short-term, adverse, negligible impact on the surrounding vegetation because the landscape has already been disturbed and the dominant plant species are nonnative and exotic grasses. The long-term, adverse impacts on soils around the new visitor center from erosion would be negligible. Plant species used to revegetate around the new visitor center would be native. The long-term impacts of using native plant materials would be beneficial, local, and negligible.

The short-term adverse impacts of trail development on vegetation at Tuzigoot would be negligible because any change in the distribution or abundance of individual plants or communities would not likely be measurable. Similarly, because no clearing would occur, the short-term, adverse impacts on soil from increased erosion would be negligible.

The long-term, adverse impacts of the trail on the understory vegetation would be negligible to minor, as would the long-term, adverse impacts from soil erosion. The long-term, adverse impacts of an increase in nonnative and exotic vegetation along the trails would be negligible to minor.

Construction of the Tavasci Marsh boardwalk would disturb soils, but the erosion potential would not increase, and soil productivity would not be affected. The short-term impact on soils would be adverse but local and negligible. Once completed, the boardwalk would have a negligible, long-term, adverse impact on soil because the soil would not be disturbed, and the erosion potential would not increase. Soil productivity would be adversely impacted, but the effects would

be local and negligible. The short-term, adverse impacts on vegetation during boardwalk construction would be negligible. The long-term, adverse impacts on vegetation could be reduced by designing the boardwalk to minimize shading of the surrounding vegetation. The long-term, adverse impacts on vegetation from the boardwalk would be negligible.

There would be no cumulative impacts under alternative C on soils or vegetation at Montezuma Castle National Monument.

The impacts of alternative C on soils in combination with the impacts of the proposed greenway trail at Tuzigoot National Monument would result in negligible, long-term, adverse, cumulative impacts on soils and vegetation.

Alternative C would not constitute an impairment of soil or vegetation resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wetlands

A boardwalk into the Tavasci Marsh is proposed to provide visitors with an opportunity to experience the marsh as well as to provide education and interpretation of the marsh resource. The boardwalk could have both short- and long-term impacts on habitat in the marsh. During construction, the potential adverse impacts on the marsh include habitat disturbance. The impacts from habitat disturbance could be reduced by siting the boardwalk where there is the least impact on areas used by species that frequent the marsh and by designing to avoid shading the surrounding vegetation. With mitigation, the short-term impacts on the habitat characteristics of the marsh could be negligible to minor.

Construction activities would increase the amount of contaminated sediment in the

water column. The contaminants accumulate in the tissues of the wildlife that live in the marsh. Over time, wildlife exposed to these contaminants can experience adverse impacts on reproductive success. To limit the amount of contaminated sediment in the water column, the construction of the boardwalk could be timed such that the water level is relatively low. Sediment fences could be installed to keep the disturbed sediment from spreading over a wider area. The long-term, adverse impacts on the habitat characteristics of the marsh would be negligible to minor, depending on the level of exposure to the contaminated sediment.

Cumulative Impacts. The cumulative impacts of alternative C are the same as those described for alternative B.

Conclusion. There would be no actions at Montezuma Castle National Monument that would affect wetlands under alternative C.

Active marsh restoration activities would have a negligible to minor, long-term, beneficial effect on wetland habitat functions at Tavasci Marsh. Trail development around the marsh could increase sedimentation in the marsh. The long-term impacts of the increased sedimentation on the marsh would be negligible. Construction of the boardwalk could impact wetland habitat quality in the marsh. With mitigation, the short- and long-term impacts on the marsh wetlands would be negligible to minor. There would be no cumulative impacts on wetlands of alternative C at Montezuma Castle or Tuzigoot national monuments under this alternative.

The impacts of alternative C would not constitute an impairment of wetland resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

Wildlife

Montezuma Castle National Monument. The impacts on wildlife and wildlife habitat from the proposed trail in the riparian area under alternative C would be greater than the impacts under alternative B because the trail would run the length of the riparian area in the monument. The habitat available within the monument for species sensitive to disturbance would be less because the trail is longer. Potential adverse impacts from erosion associated with the trail include negligible, local effects on aquatic species' habitats if sediments accumulate in the creek. Management actions could include closure of the trail during breeding season to minimize the impacts. The long-term, adverse impacts on sensitive wildlife would be minor to moderate because erosion could impact the local population enough to change abundance or distribution of a species within the monument.

At Montezuma Well, in addition to the trail in the former pasture, an additional trail would be developed from the pasture to the riparian area. This would increase the wildlife species, and types of habitat that could be disturbed. The adverse impacts of the trail to the riparian area would be minimized by route design to minimize the creation of additional edges within the riparian area that would reduce the size of suitable habitat and increase opportunities for predators. The short-term, adverse impacts from the trail on the riparian area would be negligible to minor. Although some individuals could be impacted by the trail, the long-term, adverse impacts would be negligible because the trail would not reduce the abundance or distribution of a species at Montezuma Well.

Tuzigoot National Monument. A boardwalk into the marsh would be developed as described for alternative B, and the impacts would be the same: the short-term, adverse impacts on wildlife from construction of the boardwalk would be negligible, and the long-term, adverse im-

pacts on wildlife species sensitive to disturbance would be negligible to minor, while for the more common adaptable species, the effects would be negligible.

The impacts of trail development under alternative C would be greater than the impacts under alternative B because the trails in the monument would be longer and would impact a broader range of habitats. Development of the trail could disturb some wildlife species, resulting in temporary displacement. The short-term, adverse impacts of trail development could be minimized by timing trail work to the extent practicable to avoid seasons when there is an especially high concentration of wildlife in the riparian area or in Tavaschi Marsh. The short-term, adverse impacts of trail development would be negligible. Although the trail would be unlikely to increase opportunities for predators, visitors could be present across a greater area of the monument. Species that are easily disturbed would have less suitable habitat within the monument. This could impact the abundance and distribution of some species within the monument. Therefore, the long-term, adverse impacts on wildlife and their habitat would be minor.

Cumulative Impacts. Increased development (for example, trails) and visitation at Montezuma Castle National Monument would have minimal impact wildlife or wildlife habitats at the monument. Alternative C's contribution to the negligible, cumulative effects on wildlife would be small.

At Tuzigoot, the Verde River Greenway Master Plan (Arizona State Parks 2004), as previously described, would have local impacts on wildlife habitat within the monument along the Verde River. These impacts would include disturbance that could limit foraging activity or adversely impact nesting. These impacts could be reduced by timing trail development to minimize the impact on breeding activity. The long-term impacts of the trail devel-

opment would be adverse and negligible to minor but would be unlikely to affect the distribution of individuals outside the local area and would not have an impact on viability of regional wildlife populations. The impacts of alternative C in combination with the impacts of the proposed greenway trail would result in negligible to minor, long-term, adverse, cumulative impacts on wildlife and wildlife habitat.

Conclusion. This alternative includes actions that would have the greatest adverse impacts on wildlife and wildlife habitat when compared to the other alternatives. In particular, proposed trails in each monument are longer and would impact more habitat within each site. Those species that are easily disturbed are of particular concern. The long-term, adverse impacts on sensitive species from the increased length of the trails would be minor to moderate at Montezuma Castle National Monument. The long-term, adverse impacts on wildlife and habitat at Montezuma Well would be local and negligible.

At Tuzigoot National Monument, the trail along the riparian area and the marsh would be unlikely to increase opportunities for predators, but visitors could have a greater presence. Species that are easily disturbed would have a less suitable habitat within the monument. This could impact the abundance and distribution of some species locally within the monument. Therefore, the long-term, adverse impacts on wildlife and their habitat would be local and negligible to minor. The impacts of alternative C in combination with the impacts of the proposed greenway trail would result in negligible to minor, long-term, adverse, cumulative impacts on wildlife and wildlife habitat.

Alternative C would not constitute an impairment of wildlife or wildlife habitat resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consis-

tent with section 1.4.7.1 of *Management Policies 2006*.

Threatened and Endangered Species

Southwestern Willow Flycatcher. There could be greater effects on southwestern willow flycatcher habitat in Montezuma Castle or Tuzigoot national monuments under alternative C than under alternative A. These impacts would result in part from trails that would be established at each site. The trail routes have not yet been determined but would be designed to have the least effect on flycatcher habitat. In addition, the National Park Service would consider use restrictions for some trails to minimize habitat disturbances. These restrictions could include limited access during breeding season or during periods of key activity such as foraging. Prior to initiating actions that would affect the southwestern willow flycatcher or its habitat, the National Park Service would complete additional environmental compliance activities and consult with the U.S. Fish and Wildlife Service as appropriate.

Montezuma Castle National Monument. As described for alternative B, trail development could be managed such that there would be no short-term, adverse effects on flycatcher habitat in the riparian area from trail designation.

Visitor use of the trail could discourage flycatcher foraging around the trail while visitors are present because flycatchers are shy. The proposed trail would run the length of the riparian area within the monument. Additional management actions could be necessary to reduce the long-term effects of trail use on foraging behavior. These actions include, but would not be limited to, use restrictions during breeding season. Long-term trail use could affect flycatcher foraging activity at Montezuma Castle National Monument, but the effect would not likely be adverse.

Tuzigoot National Monument. In addition to actions proposed under alternative B,

there would be additional unimproved trails around the marsh and connecting to Peck's Lake. Trail alignments in the monument and connections to existing trails have not been identified. The short-term effects of trails at Tuzigoot National Monument would be the same as for the trail at Montezuma Castle National Monument. The trails and the boardwalk would bring visitors near more areas where the flycatchers forage. The adverse impacts of the trails and the boardwalk could be reduced by avoiding preferred forage habitat to the extent practicable. If trail use is found to have an adverse impact on foraging behavior, management actions would be implemented to reduce these effects, including limiting access on the trail during certain times of year or during periods of key activity. Visitor use of the trails and the boardwalk could have a long-term effect on flycatcher foraging habitat, but the effects would not likely be adverse.

Cumulative Impacts. There is a documented nesting site for southwestern willow flycatcher just outside the Tuzigoot National Monument boundary in the Verde River riparian area. Ditch maintenance activities in the area help maintain the conditions that the flycatcher favors when nesting. The ongoing ditch maintenance activities would continue to have a beneficial effect on flycatcher habitat.

At Tuzigoot National Monument, the Verde River Greenway Master Plan, as described previously, would contribute to cumulative effects. In addition, Arizona State Parks has proposed a small parking lot and boat launch on the east side of the monument entrance road outside the monument boundary; this would require modifications to the existing roadway. The proposed location of the boat launch is within the designated critical habitat for the flycatcher, and vegetation in the vicinity has been used for nesting. Increased activity could disturb the flycatcher and discourage continued use of the area for nesting. The National Park Service would

work with Arizona State Parks to minimize potential adverse impacts associated with the Greenway Master Plan trail. The effects of the boat launch could be reduced by shifting visitor activity on the river away from the patch of vegetation that serves as nesting habitat. In addition, any trail development would avoid creating new or longer edges along a nesting patch that could make the nests more vulnerable to predation. The proposed trail could have a long-term effect on the nesting habitat for the flycatcher along the Verde River, but these effects are unlikely to be adverse. The effects of alternative C in combination with the effects of the other actions described above could affect flycatcher habitat; however, the cumulative effects would not likely be adverse as a result of mitigation measures and adaptive management strategies.

Conclusion. Disturbance of flycatcher habitat would be greater than under alternative C and would require additional mitigation measures to offset the potential effects on habitat and foraging behavior and to avoid adverse effects. In the short term, trail development would affect, but is not likely to adversely affect, flycatcher foraging activity. Visitor use of the proposed trails could have long-term effects on flycatcher foraging behavior. These effects on flycatcher habitat could be offset using targeted and adapted management strategies to avoid adverse effects. Because the proposed trails would affect a larger area at both monuments, access to the trails could be more limited than under alternative B to ensure that the effects from trail use would not be adverse. The marsh restoration activities would affect flycatcher foraging habitat, but the effects would likely be beneficial.

Outside the boundaries at Tuzigoot National Monument, the ongoing ditch maintenance activities could have a long-term, negligible to minor, beneficial effect on flycatcher habitat. The effects of alternative C in combination with the effects of

the other actions described above could affect flycatcher habitat; however, the cumulative effects would not likely be adverse because of mitigation measures and adaptive management strategies.

Yuma Clapper Rail. The effects of alternative C on habitat of the Yuma clapper rail in Tavaschi Marsh would be the same as for alternative B. Marsh restoration activities would affect rail habitat in the short term, but the effect would be offset by adaptive management strategies and would be beneficial in the long term as the rail's preferred habitat would be improved. Development of the boardwalk would have a short-term effect on water quality and habitat in the marsh, although the long-term effects are unlikely to be adverse. Exposure to selenium in the marsh could affect, but is not likely to adversely affect, the long-term reproductive success of the clapper rails that primarily use the marsh to forage during migration stopovers.

Cumulative Impacts. There are no past, present, or proposed actions in addition to alternative C that would affect the Yuma clapper rail or its habitat at Tavaschi Marsh.

Conclusion. The effects of alternative C on the Yuma clapper rail and its habitat at Tavaschi Marsh would be the same as the effects described for alternative B. The development of a boardwalk in the marsh would have short-term effects on water quality and habitat. These effects could be mitigated such that the impact is not adverse. Exposure to selenium in the marsh could affect, but is not likely to adversely affect, the long-term reproductive success of the clapper rails that use the marsh to forage during migration stopovers. There are no cumulative effects on the rail associated with this alternative.

Yellow-billed Cuckoo. Although there is more proposed development under alternative C, the effects of alternative C on the

yellow-billed cuckoo and its habitat in the monument are similar to the effects of alternative B. A footbridge across Beaver Creek is proposed at Montezuma Castle National Monument to provide visitor access to the trails in the riparian area. Additionally, the trail in the riparian area runs the entire length of the creek within the monument. Potential adverse effects of the footbridge would be offset by avoiding impacts on the large trees (for example, the Arizona sycamore and the cottonwoods) that are important for both foraging and breeding activities. Development of the footbridge could affect yellow-billed cuckoo habitat, but the effects are unlikely to be adverse.

Alternative C includes a proposal to develop an unimproved trail from the picnic area to Wet Beaver Creek at Montezuma Well. Effects on cuckoo habitat at Montezuma Well include potential removal of tree species that play in an important role in nesting and foraging activities. Potential adverse effects would be offset by siting the trail to minimize tree loss. Because this species is tolerant of disturbance, the long-term effects associated with visitor use of the trail could affect, but are unlikely to adversely affect, the yellow-billed cuckoo or its habitat.

The extent of the trail network across the monument and along the edge of the riparian area would increase at Tuzigoot National Monument. Cottonwood trees are present in the riparian area. The trail route would be designed to avoid the cottonwood trees used by yellow-billed cuckoos for forage. Again, the cuckoo is relatively tolerant of disturbance, thus the presence of visitors is unlikely to disturb foraging activity. Trail development and use at Tuzigoot could affect, but is unlikely to adversely affect, yellow-billed cuckoo foraging behavior.

Cumulative Impacts. There are no past, present, or proposed actions outside the alternative C proposed action that would

affect the yellow-billed cuckoo or its habitat at the monuments.

Conclusion. Development of the foot-bridge at Montezuma Castle National Monument, the trail to the creek at Montezuma Well, and the trail along the riparian area at Tuzigoot National Monument could affect, but are not likely to adversely affect, yellow-billed cuckoo habitat. Potential adverse effects would be mitigated by avoiding impacts to the large trees that are important to cuckoo habitat. Visitor use of the trail could affect, but is unlikely to adversely affect, the cuckoo or its habitat. There are no cumulative effects associated with this alternative.

The actions associated with alternative C would not constitute an impairment of threatened and endangered species resources or values at Montezuma Castle or Tuzigoot national monuments. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

VISITOR USE AND EXPERIENCE

Visitor Experiences of Monument Resources

In alternative C, the three sites in the monuments would be connected with coordinated orientation and marketing via partnerships in the Verde Valley. This coordinated orientation would encourage visitors to visit all three sites in the monuments as well as other sites in the region to get better acquainted with the resources and how they each tell, first hand, a unique element of the prehistoric and historic stories associated with human settlement of the Verde Valley. The increased exposure of visitors to all three sites in the monuments would have a long-term, moderate, beneficial effect on the visitor experience.

This alternative also emphasizes increased access to water and related riparian areas to showcase the connections of human

settlement of the Verde Valley to the natural environment. At each site, trails would make the riparian areas accessible to visitors. Visitors at Montezuma Castle would be able to cross Beaver Creek and gain views back to the castle with the creek in the foreground. Natural surface trails along the south side of the creek would provide a different hiking experience for visitors, including opportunities for self-exploration and a better understanding of the importance of riparian and water resources to the history of the Sinagua. This opportunity was highly desired by the public during the general management plan scoping process and by visitors that responded to the visitor survey; therefore, trail opportunities to and along Beaver Creek would be considered a long-term, major, beneficial impact.

Also at the Castle, additional parking would alleviate some of the congestion from peak use by automobiles and tour buses. During peak season, when impacts from high volumes of vehicles are highest, this increased supply of parking would have a long-term, moderate, beneficial effect.

Finally, a regional multi-use trail is proposed along Montezuma Castle Highway at the north end of the monument. This trail was desired by local trail groups to connect a regional trail that extends through the Verde Valley, providing a long-term, major, benefit for local and regional residents interested in regional trail opportunities.

Visitors at Montezuma Well would be able to take a trail across prehistoric and historic farming land to access Beaver Creek. This area is known for its outstanding birding opportunities and shaded river banks, providing a cool and quiet escape for visitors. Trail opportunities to Beaver Creek were also highly desired by the public and visitor survey respondents, making this a long-term, major, beneficial effect on the visitor experience.

At Tuzigoot, trails would connect the monument to Dead Horse Ranch State Park, the Verde River Greenway, and Coconino National Forest via a boardwalk and trail system in Tavaschi Marsh. The marsh is known for its outstanding birding opportunities and shaded marshlands, providing a cool and quiet escape for visitors. Trail opportunities to Tavaschi Marsh and surrounding public lands were also desired by the public and survey respondents, making this a long-term, major, beneficial impact.

Also, in partnership with Arizona State Parks, the National Park Service would provide a Verde River access point in the Verde River Greenway, increasing recreation opportunities, and access to the highly desirable Verde River. This would be a long-term, moderate, benefit for visitors to Tuzigoot and Dead Horse Ranch State Park and for residents of the surrounding community.

This alternative would also increase opportunities for cultural demonstrations of craftsmanship and social activities in and around the Tuzigoot Pueblo. Paved trails south of the pueblo would provide access to the river. Signage and programs in this area would interpret prehistoric trade activities and farming that would have been associated with life in the pueblo. The visitor survey identified a strong interest by visitors for more “hands-on” activities, including demonstrations by modern affiliated tribes; therefore, this increase in interpretive programs and services would be considered a long-term, moderate benefit for visitors interested in these types of programs.

Finally, this alternative includes a monitoring and management program for user capacity. At all three sites, monument staff would monitor and manage areas where action is most likely needed to achieve desired conditions. This program would help control impacts related to crowding, user conflict, human-caused noise, and resource damage, leading to long-term,

moderate, beneficial impacts on visitor experiences.

Access to Orientation, Interpretation, and Education

Under alternative C, the three sites in the monuments would be connected via coordinated orientation efforts throughout the Verde Valley. Partnerships for improved wayfinding, information dissemination, and marketing would connect the resources at all sites in the Verde Valley, resulting in a long-term, major, beneficial effect on interpretation and orientation opportunities.

This alternative calls for increased cultural demonstrations and programs at all three sites, which are highly desired by the public, resulting in a long-term, moderate benefit for those visitors seeking more education opportunities.

This alternative also includes new interpretive opportunities based out of the Back cabin at Montezuma Well. The interpretive programs would emphasize prehistoric and historic farming activities. More formalized and consistent interpretive opportunities were desired by the public and by visitors who responded to the visitor survey; therefore, the new opportunities at the Back cabin are considered a long-term, moderate, benefit for visitors.

The new visitor center at Montezuma Well would serve as a focal point for visitor contact to improve visitor understanding of regional opportunities and to gain a more comprehensive understanding of settlement, land use, and migration in the Verde Valley. It would also enable improved distribution of visitors among the three sites. Improved visitor orientation and interpretation services would contribute to better visitor understanding and appreciation of the resources of the monuments and the region, and would result in long-term, moderate, beneficial impacts on visitors. Removal of the existing visitor contact station at the Well would result in

long-term, minor beneficial impacts by improving scenic quality.

Visitor Safety

Safety information would continue to be available at all three sites. At the Castle, additional parking would minimize the crowded conditions that sometimes occur during peak hours, increasing both perceived and actual visitor safety during visitors' arrival. At Montezuma Well, the expanded visitor contact station would improve dissemination of orientation information on safety factors, which may reduce unsafe incidents. Finally, at Tuzigoot, designating trails in areas that are currently being explored by visitors may reduce safety hazards. These improvements would result in long-term, minor, beneficial impacts on visitor safety.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on the visitor experience at all three sites. First, at Montezuma Castle, the proposed Yavapai-Apache Nation Native American Cultural Center would likely have long-term, moderate, beneficial impacts on interpretation and education opportunities related to the cultural history of the region. In this alternative, the coordinated orientation in the Verde Valley and the Castle's existing visitor center would complement the new education and interpretive opportunities provided at the cultural center, enhancing the long-term beneficial impacts. The cultural center would also likely attract visitors to the area and may increase visitation to the Castle. Alternative C includes an expansion of the parking area at the Castle, which would help mitigate crowded conditions. Further, this alternative would monitor visitor use, particularly crowded conditions in the parking area, visitor center, and along the loop trail, which would allow the monument to work cooperatively with the tribe to manage the distribution of use between the cultural center and Castle. Finally, the regional multi-use trail

proposed along Montezuma Castle Highway would have a beneficial impact on recreation opportunities in the region. This alternative would connect the regional trail through the monument, which would result in a long-term, beneficial impact on this proposed recreation opportunity.

At Montezuma Well, surrounding development projects could have adverse impacts on visitor experiences by increasing visitation to Montezuma Well and thereby impacting the contemplative experiences at the outlet, along the trails, and in the picnic area. Also, these developments may have negative impacts on the scenic viewsheds of Montezuma Well. Alternative C includes more trail opportunities in Montezuma Well, which may help distribute use and improve recreation opportunities. In addition, this alternative includes a monitoring program of use levels and visitor experiences, so if increasing use results in negative impacts on the quiet and contemplative settings, the monument would take actions to better manage and distribute use to mitigate these impacts. There are no proposals in alternative C that would mitigate the potential impacts to the viewsheds from surrounding developments.

At Tuzigoot, the camping and reservoir improvements at Dead Horse Ranch State Park would likely increase the desirability of the state park for day and overnight use. As more people visit the state park, demand for trail connections to Tuzigoot would likely increase. This alternative proposes trail connections between the monument and the park, a long-term, moderate, beneficial impact. Further, the proposed recreation opportunities that would be part of the Verde River Greenway, which runs along the southern boundary of Tuzigoot, would enhance recreation opportunities for Tuzigoot visitors. Alternative C contributes to the beneficial impacts of the Verde River Greenway by providing a Verde River access point in the Verde River Greenway,

increasing recreation opportunities and access to the highly desirable Verde River. The restoration of the mine tailings by Freeport McMoRan, particularly covering the tailings with topsoil to promote vegetation growth, would likely have a major, beneficial impact on visitor experiences at Tuzigoot by improving the scenic viewshed.

Finally, the proposed Sinaguan Circle Tour could enhance the interpretive opportunities at all three sites by connecting the Sinaguan sites in the region via an interpretive, self-guided tour with associated resource materials. Alternative C would contribute to this beneficial impact by providing more diverse opportunities to view and learn about the monuments' prime cultural resources and by providing enhanced interpretation of the Sinaguan story at the central orientation center.

Conclusion

Alternative C would result in increased beneficial impacts resulting from the increased diversity in opportunities to view and learn about the monuments' prime cultural resources. Particularly, connecting the three sites in the monuments via a central visitor center and orientation facility in the Verde Valley would increase exposure of visitors to all three sites and provide a better understanding of each site's unique role in settlement of the Verde Valley. Further, providing more trail opportunities and cultural programs would make visits to each site more exciting, interesting and inviting for repeat visitation.

MONUMENT OPERATIONS

The main emphasis of this alternative would be to provide increased opportunities for visitors to self-discover the beauty and wonder of the natural and cultural resources of the monuments.

Montezuma Castle National Monument

The monument headquarters would be relocated from Camp Verde to Montezuma Castle National Monument near the entrance at the intersection of Montezuma Castle Road and Montezuma Castle Highway. This facility would allow administrative activities to be moved on site and closer to visitor service activities. This would allow monument maintenance operations to be conducted more effectively, while replacing offsite workspace and storage lost with the expiration of the General Services Administration lease.

The road to the water tanks would be opened to the public, and a parking facility would be built near the water tanks to provide better views of the river valley and its proximity to the Montezuma Castle. An overlook would be constructed near the water tank, providing a unique view of Montezuma Castle. A new picnic area would be constructed west of the existing administration buildings to replace the old picnic area. A new system of trails would traverse the monument from north to south. Additional parking and/or a bus drop-off could be constructed at the junction of the Montezuma Castle entrance road and the service road to the sewage lagoons. The area south of the Montezuma Castle loop trail would include access over the creek and some picnic facilities on the south bank of the creek. From this picnic location, visitors would have views across the river to Montezuma Castle. Interpretive signs would be installed along the river near Montezuma Castle for self-guided tours. These improvements would reduce congestion in the visitor center, parking facilities, and on the trail to the Castle. The actions described above associated with alternative C would result in long-term, moderate to major, beneficial effects on monument operations because of increased, improved space for monument operations, and improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due the addition of facilities that

would require increased operations and maintenance. This would include the adverse impacts on operations from potential washouts during floods of a new footbridge across Beaver Creek. With the road to the water tanks open to the public, any increased potential for vandalism would be mitigated through increased staff presence, signage, or other security measures.

Montezuma Well

A new visitor center would be constructed along Beaver Creek Road near the entrance to Montezuma Well to increase visitor orientation and interpretation services on site. A trail would be constructed parallel to the road leading from the new visitor center to Montezuma Well, and, if assessment determines that there would be no conflict with preservation of significant cultural resources, another trail would be constructed surrounding the well and near the south boundary of the monument from Montezuma Well to the existing picnic area near Beaver Creek Road. The size of the administration area would be reduced in this alternative. A corridor along Beaver Creek Road would be designated to accommodate horseback riding, hiking and mountain biking. Additional trails would be provided at Montezuma Well for visitors to connect with the natural environment.

These improvements would enhance interpretive opportunities at Montezuma Well and would also encourage visitors to walk around and see more of the site. Maintenance operations would also become more efficient at Montezuma Well because of onsite maintenance facilities. The actions to be implemented at Montezuma Well under alternative C would result in long-term, moderate to major, beneficial effects on monument operations because of increased and improved onsite space for monument operations, and improved capability to manage visitors and resources. There would be long-term, minor, adverse impacts due the ad-

dition of facilities that would require increased operations and maintenance.

Tuzigoot National Monument

The mine tailings at Tuzigoot would be removed from the legislated boundary. A new wayside would be added to the south of the tailings. A paved trail would be added that connects the visitor center with the Tavasci Marsh. Additional trails would be constructed in the area east of the pueblo. A hiking trail to Peck's Lake would be constructed. The hiking trails would connect to the trails in the Coconino National Forest north of the monument. Several mountain bike trails would be added west of the visitor center. At Tuzigoot, if assessment determines that there would be no conflict with preservation of significant cultural resources, mountain bicycling opportunities may also be provided on old roadbeds in the area. Trail connections with neighboring federal and state lands would be explored.

While interpretation would be improved at Tuzigoot, there would still be no area designated at Tuzigoot for group interpretation. Maintenance responsibilities would increase because of the additional recreational facilities. Alternative C would result in long-term, negligible, beneficial effects on monument operations because of the improved capability to manage visitors and resources.

All Sites

Visitor contact facilities would be located at each of the three sites. The monument would depend on partnerships with surrounding public lands agencies to provide connections to recreational and educational opportunities off site. Protection of cultural resources would not change from the no-action alternative. Protection of natural resources would be reduced from alternative B. Visitor services and administrative facilities may be expanded in select areas (for example, new headquarters at the Castle, new visitor center at Montezuma Well, new trails at all three sites),

leaving a slightly larger development footprint. Trail connection opportunities with surrounding public lands would be explored with partners to increase recreation and education activities. The visitor stay would be extended at each of the three sites. The monuments could become the primary destination for a larger number of visitors, especially for local and regional residents.

The National Park Service would acquire most of the lands within the legislated boundaries, except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary. Maintenance responsibilities would increase with alternative C because of the additional onsite facilities, but would be more efficient because of increased maintenance facilities in each of the sites. Interpretation would be improved. Visitation could increase, based on a larger number of visitors and a longer average stay. Assuming that the workforce increases to accommodate the increased interpretive and maintenance responsibilities, alternative C would result in long-term, minor to moderate, beneficial effects on monument operations.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on monument operations. The other plans, projects, and actions in the region and nearby would have effects similar to those described for alternative A; namely long-term, minor, adverse, cumulative effects on monument operations, primarily the result of increased visitation and demand for associated support services. However, alternative C would have long-term, moderate, beneficial effects on monument operations, resulting in a cumulative, minor benefit for monument operations.

Conclusion

The beneficial effects of the alternative C actions on monument operations would span a range from negligible to major, although most of the benefits would be mi-

nor to moderate. Adverse impacts on monument operations would be minor. The effects of alternative C in combination with the effects of other past, present, and reasonably foreseeable future actions would result in a long-term, minor, beneficial effect on monument operations.

SOCIOECONOMICS

The main emphasis of this alternative would be to provide increased opportunities for visitors to self-discover the beauty and wonder of the natural and cultural resources of the monuments.

Montezuma Castle National Monument

The monument headquarters would be relocated from Camp Verde to Montezuma Castle National Monument near the entrance at the intersection of Montezuma Castle Road and Montezuma Castle Highway. This facility would allow administrative activities to be moved on site, closer to visitor service activities.

New trails would be constructed on the site. The road to the water tanks would be opened to the public, and a parking facility would be built near the water tanks to provide better views of the river valley and its proximity to Montezuma Castle. An overlook would be constructed near the water tank providing a unique view of the Castle. A new picnic area would be constructed west of the existing administration buildings that would replace the old picnic area. A new system of trails would traverse the monument from north to south. Additional parking and/or a bus drop-off could be constructed at the junction of the Castle entrance road and the service road to the sewage lagoons. The area south of the Castle loop trail would include access over the creek and some picnic facilities on the south bank of the creek. Although this alternative would eliminate NPS spending on the rental of an offsite monument headquarters in Camp Verde, the construction activity associated with alternative C would result in

short-term, minor, beneficial effects on local socioeconomics.

Montezuma Well

A new visitor center would be constructed along Beaver Creek Road near the entrance to Montezuma Well to increase visitor orientation and interpretation services on site. A trail would be constructed parallel to the road leading from the new visitor center to Montezuma Well, and another trail would be constructed surrounding Montezuma Well. This trail would connect with another trail near the south boundary of the monument to the existing picnic area near Beaver Creek Road. A corridor along Beaver Creek Road would be designated to accommodate horseback riding, hiking, and mountain biking. Additional trails would be provided at Montezuma Well for visitors to connect with the natural environment. This construction activity associated with alternative C would result in short-term, minor, beneficial effects on local socioeconomics.

Tuzigoot National Monument

A marsh boardwalk would connect the visitor center with the Tavaschi Marsh. Additional trails would be constructed in the area to the east of the pueblo. An additional workspace and storage facility near the existing maintenance area would provide onsite space for the functions and operations of Tuzigoot, replacing offsite workspace and storage lost with the expiration of the General Services Administration lease with the Yavapai Apache reservation. This construction activity associated with alternative C would result in short-term, negligible, beneficial effects on local socioeconomics.

All Sites

Visitor contact facilities would be located at each of the three sites, encouraging visitors to spend more time at the current site and also visit the other sites. Interpretive opportunities would increase at each site. The monument would depend on part-

nerships with surrounding public lands agencies to provide connections to recreational and educational opportunities off site. Visitor services and administrative facilities may be expanded in select areas (for example, new headquarters at Montezuma Castle, new visitor center at Montezuma Well, new trails at all three sites), leaving a slightly larger development footprint and more attractions for visitors. Trail connection opportunities with surrounding public lands would be explored with partners to increase recreation and education activities.

The monuments could become the primary destination for a larger number of visitors, especially for local and regional residents. Visitation could increase, based on a larger number of visitors and a longer average stay. Additional staffing could be required to accommodate this visitation. The National Park Service would acquire most of the lands within the legislated boundaries except for the mine tailings at Tuzigoot, which would be removed from the legislated boundary. This would remove approximately 600 acres from the property tax rolls of the local government, resulting in a local, negligible, adverse socioeconomic effect. Maintenance responsibilities would increase with alternative C because of the additional onsite facilities. Considering the construction activity and assuming that the workforce is increased to accommodate the increased interpretive and maintenance responsibilities, alternative C would result in long-term, negligible, beneficial effects on socioeconomics.

Cumulative Effects

Several projects in the region may contribute to cumulative impacts on socioeconomics in the region. The effects of these projects on socioeconomics would be as described for alternative A. The effects of alternative C (minor benefits) in combination with the effects of other past, present, and reasonably foreseeable future actions would result in short- and long-term, mi-

nor, beneficial, cumulative effects on socioeconomics. Adjacent and surrounding land use changes could result in long-term, minor to moderate, adverse impacts to groundwater resources connected to Montezuma Well.

Conclusion

When the effects of each of the sites of the monuments are added, alternative C would result in negligible to minor, short- and long-term, beneficial effects on socioeconomics in the region. The effects of alternative C in combination with the effects of other past, present, and reasonably foreseeable future actions would result in short- and long-term, minor, beneficial, cumulative effects on socioeconomics. Adjacent and surrounding land use changes could result in long-term, minor to moderate, adverse impacts to ground-

water resources connected to Montezuma Well.

IMPAIRMENT CONCLUSION FOR ALTERNATIVE C

Under this alternative, there would be no adverse impacts on resources or values whose conservation is (1) necessary to fulfill specific purposes identified in the national monuments' establishing legislation, (2) key to the cultural integrity or opportunities for enjoyment of the national monuments, or (3) identified as a goal in this general management plan or other relevant NPS planning documents. Consequently, there would be no impairment of resources or values. Implementation of this alternative would not result in any unacceptable impacts and is consistent with section 1.4.7.1 of *Management Policies 2006*.

CHAPTER 5: CONSULTATION AND COORDINATION

HISTORY OF PUBLIC INVOLVEMENT

PUBLIC AND AGENCY DEVELOPMENT

The general management plan and environmental assessment for Montezuma Castle and Tuzigoot national monuments represents thoughts of the National Park Service / national monuments' staff, Native American groups, and the public. Consultation and coordination among the agencies and the public were vitally important throughout the planning process. The public had three primary avenues by which it participated during the development of the plan: participation in public meetings, responses to newsletters, and comments on the national monuments' websites.

PUBLIC MEETINGS AND NEWSLETTERS

Public meetings and newsletters were used to keep the public informed and involved in the planning process for Montezuma Castle and Tuzigoot national monuments. A mailing list was compiled that consisted of members of government agencies, organizations, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on May 29, 2003. Following additional review, the National Park Service determined that the actions anticipated in the plan would likely not result in significant environmental impacts nor was public controversy likely; therefore, an environmental assessment was appropriate rather than an environmental impact statement.

The first newsletter issued in August 2003 described the planning effort. Public meetings were held in Camp Verde on September 24, 2003, and Clarkdale on September 25, 2003, and were each at-

tended by fewer than 20 people. People attending these meetings informed the National Park Service concerning the issues (opportunities, problems, or concerns) that it should address in the general management plan.

The National Park Service also met with representatives of local, state, and other federal agencies to obtain input regarding the future of the national monuments. These meetings were held at key points throughout the planning process. The National Park Service contacted eight Native American tribes to discuss the future of the national monuments and has met with six at their request. In addition, the National Park Service partnered with Arizona State University to conduct a visitor use survey and gather data on visitor characteristics and preferences.

The following issues and concerns were raised in response to the first newsletter, in public meetings, and in meetings with other government agencies and organizations:

- Lands within the existing legislated boundaries and adjacent to the national monuments should be reviewed. These areas should be evaluated for possible boundary adjustments.
- The national monuments should be evaluated to determine if additional opportunities exist to expand the story being told at the monuments, link the prehistoric cultures with contemporary peoples, and increase the areas that are available with the monuments for visitors to explore.
- Interaction of the visitors with the resources in the national monuments should be evaluated.
- The character and level of development within the national monuments

should be evaluated. Questions as to whether existing facilities should be expanded or additional facilities are needed at the monuments to accommodate visitors and operations should also be evaluated.

- Since the national monuments' existing headquarters and maintenance facilities are outside the national monuments, the plan should examine how best to accommodate these management functions.
- Because the national monuments constitute only a small portion of the Verde Valley, the National Park Service should partner with other land management agencies, local communities, Native American tribes, and local organizations in the valley to deal with resource management and visitor use issues and opportunities.

These concerns were considered and incorporated into the issues for the general management plan.

A second newsletter, distributed in August 2004, described the management prescriptions and alternative concepts for managing the national monuments. Public meetings were held in Cottonwood and Camp Verde on September 7 and 8, 2004, respectively, and were attended by fewer than 20 people.

SECTION 7 CONSULTATION (U.S. FISH AND WILDLIFE SERVICE)

During the preparation of this document, National Park Service staff has coordinated informally with the U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office. In October 2003 the planning team initiated informal consultation with the Fish and Wildlife Service to determine the presence of federally listed threatened and endangered species in Montezuma Castle and Tuzigoot national monuments. Telephone conversations were conducted with the Fish and Wildlife Service to discuss the project and obtain

input from the agency on the alternatives and their potential impacts. The list of threatened and endangered species (see appendix D) was compiled using lists and information received from the Fish and Wildlife Service.

In accordance with the Endangered Species Act and relevant regulations in 50 CFR Part 402, the National Park Service determined that the management plan is not likely to adversely affect any federally threatened or endangered species. In informal consultation, the U.S. Fish and Wildlife Service concluded that implementation of the management plan is not likely to adversely affect listed species or critical habitat.

In addition, the National Park Service has committed to consult on future actions conducted under the framework described in this management plan to ensure that such actions are not likely to adversely affect threatened or endangered species.

ARIZONA STATE AGENCY CONSULTATION

In October 2003 a letter was sent to the Arizona Game and Fish Department requesting a list of threatened and endangered species.

Consultation was also initiated with Arizona State Parks because lands under its administration -- Dead Horse Ranch State Park and the Verde River Greenway -- are adjacent to the national monuments.

SECTION 106 CONSULTATION (ARIZONA STATE HISTORIC PRESERVATION OFFICE)

Agencies that have direct or indirect jurisdiction over historic properties are required by section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 270, *et. seq.*) to take into account the effect of any undertaking on properties listed or eligible for listing in the National Register of Historic Places.

To meet the requirements of 36 CFR 800, the National Park Service sent letters to the Arizona State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation on September 25, 2003 inviting their participation in the planning process.

The general management plan represents plan-level compliance in accordance with the 1995 programmatic agreement among the National Park Service, the Advisory Council on Historic Preservation, and under the terms of stipulation VI. E. The National Park Service, in consultation with the SHPO, will make a determination about which are programmatic exclusions under IV. A and B, and for all other undertakings, whether there is sufficient information about resources and potential effects on those resources to seek review and comment under 36 CFR 800.4-6 during the plan review process.

CONSULTATION WITH NATIVE AMERICANS

Letters were sent to the following Native American groups in September 2003 at the outset of this general management planning process to invite their participation in the planning process:

- Yavapai Apache Nation;
- Yavapai-Prescott Indian Tribe;
- Zuni Pueblo;
- The Hopi Tribe;
- Salt River Pima-Maricopa Indian Community;
- Gila River Indian Community;
- Ak-Chin Indian Community; and
- Tohono O'Odham Nation.

On November 15, 2003, Superintendent Kathy M. Davis and Archeologist Kevin Harper from the Southern Arizona Office visited the Hopi Cultural Preservation Office (HCPO) in response to the National Park Service notification letter. Davis and Harper met with Leigh Kuwanwisiwma,

Hopi Cultural Preservation Office Director, and Clay Hamilton, Hopi Cultural Preservation Office Research Assistant, to present the plan's goals and schedule and to provide an overview of the general management planning process. Kuwanwisiwma recommended that a memorandum of agreement be developed between the tribes and the national monuments to cover topics of mutual concern, including compliance, Archeological Resources Protection Act and the Native American Graves Protection and Repatriation Act issues, cultural demonstrations, and preservation.

On August 27, 2004, Davis and Harper, along with Archeologist John Schroeder and Student Conservation Association intern Amy Frost returned to the Hopi Cultural Preservation Office to meet with Director Kuwanwisiwma and employees Lee Wayne Lomayestewa, Terry Morgart, and Lanell Poseyesva. During the meeting, a draft memorandum of agreement was completed. After further review, the final version of the agreement was sent in January 2005 to representatives of the eight affiliated tribes for their consideration.

Superintendent Davis presented the general management plan process to the "Four Southern Tribes Cultural Resources Working Group Meeting, Salt River Pima-Maricopa Indian Community" on March 26, 2004, at the Salt River Senior Center. In attendance: representatives of the Tohono O'Odham Nation, Pascua Yaqui Tribe of Arizona, Ak-Chin Indian Community, Gila River Indian Community, and Salt River Pima-Maricopa Indian Community.

Superintendent Davis also met with the four southern tribes – Ak-Chin, Gila River Pima-Maricopa, Salt River Pima-Maricopa, and Tohono O'Odham – at Montezuma Castle and Tuzigoot national monuments on November 15 and 16, 2004.

The tribes will have an opportunity to review and comment on this plan.

The National Park Service will continue to consult with concerned Native American tribes to learn about sites or resources of cultural or religious significance and to develop strategies for protecting and preserving the sites and resources that might be identified as well as providing access to areas of traditional cultural and religious importance. The National Park Service will also continue to consult with concerned Native American tribes before taking actions that might affect traditional cultural properties; encourage archeologists, anthropologists, and researchers to consult with the Native American tribes

regarding areas of interest that could be included in research efforts; and promote ethnographic involvement in excavations and anthropological research.

COUNTY AND LOCAL GOVERNMENT CONSULTATION

The National Park Service consulted with Yavapai County and the towns of Camp Verde, Sedona, and Cottonwood during the planning process via partnership meetings and newsletters.

LIST OF PREPARERS

CORE PLANNING TEAM

Montezuma Castle and Tuzigoot National Monuments

Kathy M. Davis

Superintendent, responsible for review and development of the general management plan, 31 years of NPS experience, masters degree, forestry

Sherry Wood

Administrative officer, provided scoping input, 28 years of NPS experience

Leonard Ontiveros

Facility manager (acting), responsible for monument operations affected environment and contribution to scoping issues, 34 years of NPS experience

Karen Hughes

Supervisory park ranger, responsible for input to monument operations, resource protection, interpretation, and visitor use and experience, 22 years of federal government experience, bachelor of science degree

Ed Cummins

Chief, Division of Resource Protection and Visitor Services, responsible for input to monument operations, interpretation, and visitor use and experience, 27 years of NPS experience, bachelors degree, recreation and park management

Randall Skeirik

Chief, Division of Resources Management, responsible for input to monument operations and resources management affected environment, 18 years of experience as a licensed architect, 4 years with NPS, masters degree, architecture

John Schroeder

Archeologist, responsible for cultural resources affected environment and scoping issues, 15 years of experience in archeology, master degree, archeology (pending)

Dennis Casper

Biologist, responsible for input to resources management affected environment, 7 years of experience in natural resource management, bachelors degree, ecology, graduate study underway

Matthew Guebard

Archeologist, responsible for cultural resources affected environment, 3.5 years of NPS experience, masters degree, anthropology

Denver Service Center

Patrick Kenney

Project manager (former), responsible for project management and oversight, 19 years of NPS experience, bachelors degree, zoology

Cynthia Nelson

Project manager, responsible for project management and oversight, 14 years of experience with the Federal Aviation Administration and 2 years of NPS experience, masters degree, public administration

Kerri Cahill

Community planner, responsible for user carrying capacity and visitor use and experience affected environment and impacts, 15 years of experience in natural resource and recreation planning, Ph.D., natural resource recreation management

Erin Flanagan

Natural resource specialist, responsible for natural resource affected environment and impacts, 15 years of experience in resource planning, masters degree, resources law and urban and regional planning

Jane Sikoryak

Cultural resource specialist, responsible for cultural resources affected environment and impacts, 22 years of NPS experience, bachelors degree, history

Harlan Unrau

Cultural resource specialist, responsible for cultural resources affected environment and impacts, 35 years of experience in history, masters degree, history

Ruth Eitel, graphics specialist

Christy Fischer, writer-editor

CONSULTANTS

Parsons

John Hoesterey

Project manager, responsible for project management and oversight, 35 years of experience in natural resource and recreation planning, masters degree, geography

John Martin

Community planner, responsible for monument operations and socioeconomic impacts, 37 years of experience in community and transportation planning, masters degree, city and regional planning

Don Kellett

Natural resource specialist, responsible for natural resources affected environment and impacts, 16 years of experience

in biology, bachelors degree, wildlife biology

Janet Snyder,

Senior writer-editor, 34 years of experience, bachelors degree, zoology

Scott Lowry

Writer-editor, 16 years of experience, Ph.D., English

National Park Service, Southern Arizona Office

Kevin Harper, Archeologist

Larry Laing, Natural resources

Western Archeological and Conservation Center

Sue Wells, Archeologist

Western National Parks Association

Jon Fistler, Field manager

e2M (Engineering Environmental Management)

Ron Dutton, Sammons Dutton, LLC

LIST OF RECIPIENTS

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Coconino National Forest
Chiricahua National Monument
Natural Resources Conservation Service
Petrified Forest National Park
Pipe Springs National Monument
Saguaro National Park
Tumacacori National Historic Park
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. Geological Survey

U.S. SENATORS AND REPRESENTATIVES

U.S. Senator Jon Kyle
U.S. Senator John McCain
U.S. Representative Rick Renzi
U.S. Representative Bob Stump

STATE AGENCIES

Arizona Game and Fish
Arizona Office of Tourism
Arizona State Parks
Dead Horse Ranch State Park
Fort Verde State Park
Jerome State Historical Park
State Historic Preservation Office
Red Rock State Park
Slide Rock State Park

STATE OFFICIALS

Office of the Governor
State Senator Ken Bennett
State Senator John Vercamp
State Representative Henry Camarot
State Representative Tom O'Halleran

NATIVE AMERICAN TRIBES TRADITIONALLY ASSOCIATED WITH THE NATIONAL MONUMENTS

Yavapai Apache Nation
Yavapai-Prescott Indian Tribe
Zuni Pueblo
The Hopi Tribe
Salt River Pima-Maricopa Indian Community
Gila River Indian Community
Ak-Chin Indian Community
Tohono O'Odham Nation

LOCAL AND REGIONAL GOVERNMENT AGENCIES

Camp Verde Fire Department
Camp Verde Marshall's Office
Camp Verde Schools
City of Cottonwood
City of Sedona
Clarkdale Fire Department
Cottonwood Fire Department
Cottonwood Police Department
Mingus Union High School District
Montezuma-Rimrock Fire Department
Prescott Department of Public Safety
Sedona/Oak Creek School District
Sedona Parks and Recreation
Town of Camp Verde
Town of Clarkdale
Town of Jerome
Verde Greenway
Verde Valley Fire Department
Yavapai County
Yavapai County Development Services
Yavapai County Sheriff's Office

**ORGANIZATIONS
AND BUSINESSES**

Camp Verde Historical Society
Camp Verde Journal
Central Arizona Land Trust
Clarkdale Chamber of Commerce
Cottonwood Chamber of Commerce
Glen Canyon Institute
Glen Canyon Trust
Jerome Chamber of Commerce
Jerome Historical Society
Keep Sedona Beautiful
Northern Arizona Audubon Society
Northern Arizona University Department
of Biological Sciences
Freeport McMoRan Copper and Gold,
Inc. (formerly Phelps-Dodge Company)
Plateau Group
Radio Station KAZM
Radio Station KNAU
Sedona Academy

Sedona Historical Society
Sedona-Oak Creek Chamber of Com-
merce
Sedona Red Rock News
Shumway Family Living Trust
Sierra Club
Southwest Expedition Institute, Inc.
The Nature Conservancy
Trust for Public Lands
United Christian School of Camp Verde
Verde Independent/Camp Verde Bugle
Verde River Citizens Alliance
Verde Valley Archeological Society
Verde Valley Open Space Committee
Verde Watershed Association
Walmart
Western Archeological and Conservation
Center
Western National Parks Association
Yavapai Broadcasting
Yavapai College, Verde Valley Campus

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APPENDIX A: LEGAL MANDATES

Appendix A includes summaries and descriptions of the application of federal laws, regulations, executive orders, policies, and guidelines that are applicable to the National Park Service's management of resources in the natural and human environment.

ENABLING LEGISLATION

ANTIQUITIES ACT OF 1906 AND PRESIDENTIAL PROCLAMATION 696, DECEMBER 8, 1906, ESTABLISHING MONTEZUMA CASTLE NATIONAL MONUMENT

Montezuma Castle National Monument was founded by virtue of Presidential Proclamation 696, under the authority granted the president by the Antiquities Act of 1906 (16 *United States Code* 431-433). President Theodore Roosevelt issued the proclamation on December 8, 1906. The Antiquities Act and the subsequent proclamation form the foundation for all the rules, regulations, laws, and policies of the monument. Montezuma Well was added in 1943 as a detached unit of the monument with an act of Congress (October 19, 1943, 57 Stat. 572).

51. Montezuma Castle National Monument

Establishment: Proclamation (No. 696) of December 8, 1906.....	Page 235
Boundaries enlarged: Proclamation (No. 2226) of February 23, 1937.....	237

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 696—December 8, 1906—34 Stat. 3265]

WHEREAS, it is provided by section two of the Act of Congress, approved June 8, 1906, entitled, "An act for the preservation of American antiquities," "That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic land marks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected";

AND, WHEREAS, the prehistoric structure known as Montezuma's Castle in the Territory of Arizona, situated upon public lands owned by the United States, is of the greatest ethnological value and scientific interest and it appears that the public good would be promoted by reserving this ruin as a national monument with as much land as may be necessary for the proper protection thereof;

NOW, THEREFORE, I, Theodore Roosevelt, President of the United States of America, by virtue of the power in me vested by section two of the aforesaid Act of Congress, do hereby set aside as the Montezuma Castle National Monument the prehistoric structure aforesaid and for the proper protection thereof do hereby reserve from settlement, entry or other disposal, all those certain tracts, pieces or parcels of land lying and being in the Territory of Arizona, and within, what will be when surveyed, the tracts particularly described as follows, to wit:

The northwest quarter of the northwest quarter of section sixteen, the north half of the northeast quarter and northeast quarter of northwest quarter of section seventeen, township fourteen north, range five east, Gila and Salt River Meridian, as shown upon the map hereto attached and made a part of this proclamation.

Warning is hereby expressly given to all persons not to appropriate, excavate, injure or destroy said monument or to settle upon any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and cause the seal of the United States to be affixed.

DONE at the city of Washington this 8th day of December, in the year of our Lord one thousand nine hundred and six, and of the Independence of the United States the one hundred and thirty first.

THEODORE ROOSEVELT.

By the President:

ELIHU ROOT,
Secretary of State.

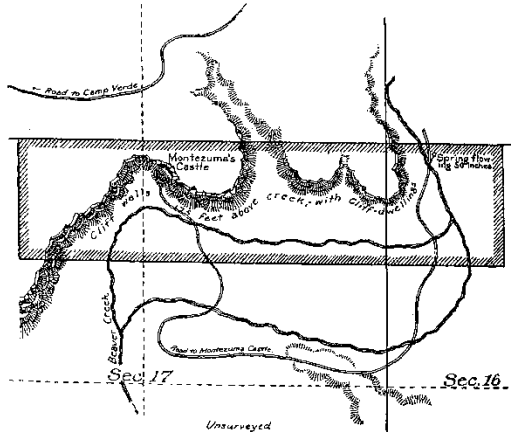
652315° — 47 — 16

MONTEZUMA CASTLE NATIONAL MONUMENT

Embracing the NW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sec. 16, the N $\frac{1}{2}$ of
NE $\frac{1}{4}$ and NE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sec. 17, T. 14 N., R. 5 E. of
Gila and Salt River Meridian,

ARIZONA.

Containing 160 acres.



DEPARTMENT OF THE INTERIOR
GENERAL LAND OFFICE,
Win. A. Richards, Commissioner.

[MAP ATTACHED TO AND MADE A PART OF THE PROCLAMATION
DATED DECEMBER 8, 1906.]

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 2226—Feb. 23, 1937—50 Stat. 1817]

WHEREAS the area in the State of Arizona established as the Montezuma Castle National Monument by Proclamation of December 8, 1906, has situated thereon prehistoric ruins and ancient cliff dwellings which are of great interest to the public; and

WHEREAS it appears that there are certain government-owned lands reserved by Proclamation of September 29, 1919, as a part of Coconino National Forest, adjacent to the boundaries of the said monument, which are required for the proper care, management, and protection of the said prehistoric ruins and ancient cliff dwellings;

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, ch. 2, 30 Stat. 11, 36 (U. S. C., title 16, sec. 473), and 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 all valid existing rights, the following-described lands in Arizona are hereby excluded from the Coconino National Forest and reserved from all forms of appropriation under the public-land laws and added to and made a part of the Montezuma Castle National Monument:

GILA AND SALT RIVER MERIDIAN

T. 14 N., R. 5 E., sec. 8, S $\frac{1}{2}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$,
S $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$;
sec. 16, E $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$
NW $\frac{1}{4}$;
sec. 17, N $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$
SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, containing 360 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 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 (ch. 408, 39 Stat. 535, U. S. C., title 16, secs. 1 and 2), and acts supplementary thereto or amendatory thereof: *Provided*, that the administration of the monument shall be subject to the withdrawal for the Salt River Irrigation project, Arizona.

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 23d day of February 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-first.

By the President:
CORDELL HULL,
Secretary of State.

FRANKLIN D. ROOSEVELT.

17. Montezuma Castle National Monument

Addition of "Montezuma Well property" to monument authorized.....	Page
.....Act of October 19, 1943	167

An Act To provide for the addition of certain land in the State of Arizona to the Montezuma Castle National Monument, approved October 19, 1943 (57 Stat. 572)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,
That (a) the Secretary of the Interior, on behalf of the United States, is authorized to acquire, in his discretion, certain lands located in the State of Arizona known as the Montezuma Well property, containing approximately one hundred and eighty acres and situated within section 36, township 15 north, range 5 east, and section 31, township 15 north, range 6 east, Gila and Salt River meridian. Such lands, when acquired, shall become a detached unit of Montezuma Castle National Monument.

Montezuma
Castle National
Monument.
Addition of
lands.

(b) Effective on the date of the acquisition of such property, the south half of the northwest quarter of section 31, township 15 north, range 6 east, Gila and Salt River meridian, containing eighty acres of land owned by the United States, shall also become a part of such national monument.

SEC. 2. All laws, rules, and regulations applicable to such national monument shall be applicable with respect to the lands described in the first section of this Act upon the addition of such lands to such national monument. The title to real property acquired pursuant to this Act shall be satisfactory to the Secretary of the Interior.

Administration.

SEC. 3. There are hereby authorized to be appropriated such sums as may be necessary but not to exceed \$25,000 to carry out the provisions of this Act.

Appropriation
authorized.

PUBLIC LAW 95-625—NOV. 10, 1978

92 STAT. 3473

TITLE III—BOUNDARY CHANGES

REVISION OF BOUNDARIES

SEC. 301. The boundaries of the following units of the National Park System are revised as follows, and there are authorized to be appropriated such sums as may be necessary, but not exceed the amounts specified in the following paragraphs for acquisitions of lands and interests in lands within areas added by reason of such revisions:

Appropriation
authorizations.

(13) Montezuma Castle National Monument, Arizona: To add approximately thirteen acres, and to delete approximately five acres as generally depicted on the map entitled "Montezuma Castle National Monument, Arizona", numbered 20,006, and dated April 1978.

APPENDIX I-6

**PRESIDENTIAL PROCLAMATION 2344, JULY 25, 1939,
ESTABLISHING TUZIGOOT NATIONAL MONUMENT**

Tuzigoot National Monument was established by President Franklin D. Roosevelt with the signing of Presidential Proclamation 2344, on July 25, 1939. The proclamation and the Antiquities Act of 1906 form the foundation for all the rules, regulations, laws, and policies of the monument.

76. Tuzigoot National Monument

Establishment: Proclamation (No. 2344) of July 25, 1939..... Page
311

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 2344—July 25, 1939—53 Stat. 2548]

WHEREAS certain Government-owned lands in the State of Arizona have situated thereon historic and prehistoric structures and other objects of historic or scientific interest; and

WHEREAS it appears it would be in the public interest to reserve such lands as a national monument to be known as the Tuzigoot 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, 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 reserved from all forms of appropriation under the public-land laws and set apart as the Tuzigoot National Monument:

GILA-SALT RIVER MERIDIAN

T. 16 N., R. 3 E., beginning at a point in section 21, N. 83 degrees 51 minutes, E. 5032.4 feet of the W $\frac{1}{4}$ corner said section 21; thence N. 26 degrees, 55 minutes, E. 1950.5 feet; thence S. 63 degrees, 05 minutes, E. 594.5 feet; thence S. 19 degrees, 56 minutes, W. 2977.7 feet; thence W. 70.0 feet; thence N. 13 degrees, 52 minutes, W. 1369.1 feet to the place of beginning containing approximately 42.665 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 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 (c. 408, 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 25th day of July in the year of our Lord nineteen hundred and thirty-nine, and of the Independence of the United States of America the one hundred and sixty-fourth.

FRANKLIN D. ROOSEVELT.

By the President:
CORDELL HULL,
Secretary of State.

27. Tuzigoot

An act to authorize additional appropriations for the acquisition of lands and interests in lands within the Sawtooth National Recreation Area in Idaho. (92 Stat. 3467) (P.L. 95-625)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE III—BOUNDARY CHANGES

SEC. 301. The boundaries of the following units of the National Park System are revised as follows, and there are authorized to be appropriated such sums as may be necessary, but not exceed the amounts specified in the following paragraphs for acquisitions of lands and interests in lands within areas added by reason of such revisions:

* * * * *

(18)(A) Tuzigoot National Monument, Arizona: To add approximately seven hundred and ninety-one acres as generally depicted on the map entitled "Master Proposal, Tuzigoot National Monument", numbered 378-30,000D, and dated January 1973: \$1,350,000.

(B) The Secretary is authorized to acquire by donation, purchase with donated or appropriated funds, exchange or otherwise and subject to such terms, reservations, conditions applied to the acquired lands as he may deem satisfactory, the lands and interests in lands that are included within the boundaries of the Tuzigoot National Monument as revised by this paragraph. When so acquired, they shall be administered in accordance with provisions of law generally applicable to units of the National Park System, including the Act of August 25, 1916 (39 Stat. 535).

(C) In exercising his authority to acquire such lands and interests in lands by exchange, the Secretary may accept title to any non-Federal property within the boundaries of the national monument and in exchange therefor he may convey to the grantor of such property any federally owned property under his jurisdiction in the State of Arizona. The values of the properties so exchanged either shall be approximately equal, or if they are not approximately equal the values shall be equalized by the payment of cash to the grantor or to the Secretary as the circumstances require.

SEC. 302. Within twelve months after the date of the enactment of this Act, the Secretary shall publish in the Federal Register a detailed map or other detailed description of the lands added or excluded from any area pursuant to section 301.

SEC. 303. (a) Within the boundaries of the areas as

revised in accordance with section 301, the Secretary is authorized to acquire lands and interests therein by donation, purchase with donated or appropriated funds, exchange, or transfer from any other Federal agency. Lands and interests therein so acquired shall become part of the area to which they are added, and shall be subjected to all laws, rules, and regulations applicable thereto. When acquiring any land pursuant to this title, the Secretary may acquire any such land subject to the retention of a right of use and occupancy for a term not to exceed twenty-five years or for the life of the owner or owners. Lands owned by a State or political subdivision thereof may be acquired only by donation.

(b)(1) Lands and interests therein deleted from any area pursuant to section 301 may be exchanged for non-Federal lands within the revised boundaries of such area, or transferred to the jurisdiction of any other Federal agency or to a State or political subdivision thereof, without monetary consideration, or be administered as public lands by the Secretary, as the Secretary may deem appropriate.

(2) In exercising the authority contained in this section with respect to lands and interests therein deleted from any such area which were acquired from a State, the Secretary may, on behalf of the United States, transfer to such State exclusive or concurrent legislative jurisdiction over such lands, subject to such terms and conditions as he may deem appropriate, to be effective upon acceptance thereof by the State.

(c) It is the established policy of Congress that wilderness, wildlife conservation, and park and recreation values of real property owned by the United States be conserved, enhanced, and developed. It is further declared to be the policy of Congress that unutilized, underutilized, or excess Federal real property be timely studied as to suitability for wilderness, wildlife conservation, or park and recreation purposes. To implement this policy, the Secretary, the Administrator of General Services, and the Director of the Office of Management and Budget shall establish a system with appropriate procedures to permit the Secretary full and early opportunity to make such studies and propose appropriate recommendations to disposing agencies for consideration in connection with determinations of further utilization or disposal of such property under existing law. Each affected executive agency is authorized and directed to provide to the Secretary such advice and information relating to such studies as the Secretary may request.

SEC. 304. The authorities in this title are supplementary to any other authorities available to the Secretary with respect to the acquisition, development, and administration of the areas referred to in section 301.

* * * * *

Approved November 10, 1978.

LAWS AND POLICIES GUIDING MANAGEMENT OF MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

Three overarching environmental protection laws and policies guide the actions of the National Park Service in the management of parks and their resources: the NPS *Organic Act of 1916*, the *National Environmental Policy Act* and its implementing regulations, and the *Omnibus Management Act*. For an in-depth discussion of guiding regulations, refer to the section “Servicewide Mandates and Policies” in the “Purpose of and Need for Action” chapter. These guiding regulations are briefly described below.

- The *Organic Act of 1916* (16 United States Code [USC] 1) commits the National Park Service to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.
- The *National Environmental Policy Act of 1969* is implemented through CEQ regulations (40 *Code of Federal Regulations* [CFR] 1500-1508). The National Park Service has, in turn, adopted procedures to comply with NEPA and CEQ regulations, as found in *Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001) and Handbook.
- The *Omnibus Management Act* (16 USC 5901 *et seq.*) underscores NEPA in that both are fundamental to park management decisions. Both acts provide direction for connecting resource management decisions to the analysis of impacts, and communicating the impacts of these decisions for the public, using appropriate technical and scientific information. Both acts also recognize that such data may not be readily available, and they provide options for resource impact analysis should this be the case.

Management Policies 2006 states that the “fundamental purpose” of the national park system is to conserve park resources and values and to provide for the public enjoyment of the parks resources and values to the extent that the resources will be left unimpaired for future generations. Native wildlife is identified as a park resource. *Management Policies 2006* provides general principles for the maintenance of natural resources in the park by:

“preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur.”

Because many forms of recreation can take place outside a national park setting, the National Park Service will therefore seek to:

- Provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in a particular unit; and
- Defer to local, state, and other federal agencies; private industry; and non-governmental organizations to meet the broader spectrum of recreational needs and demands that are not dependent on a national park setting.

Any closures or restrictions, other than those imposed by law, must be consistent with applicable laws, regulations, and policies, and (except in emergency situations) require a written determination by the superintendent that such measures are needed to:

- Protect public health and safety;
- Prevent unacceptable impacts on park resources or values;
- Carry out scientific research;
- Minimize visitor use conflicts; or
- Otherwise implement management responsibilities.

Section 4.5 of Director's Order 12 adds to this guidance by stating, "when it is not possible to modify alternatives to eliminate an activity with unknown or uncertain potential impacts, and such information is essential to making a well-reasoned decision, the National Park Service will follow the provisions of the CEQ regulations (40 CFR 1502.22)." In summary, the National Park Service must state in an environmental assessment or impact statement (1) whether such information is incomplete or unavailable; (2) the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific adverse impacts that is relevant to evaluating the reasonably foreseeable significant adverse impacts; and (4) an evaluation of such impacts based on theoretical approaches or research methods generally accepted in the scientific community.

Collectively, these guiding regulations provide a framework and process for evaluating the impacts of the alternatives proposed in this general management plan and environmental assessment.

FISH AND WILDLIFE

The *Migratory Bird Treaty Act of 1918*, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except as authorized under a valid permit (50 CFR 21.11). Additionally, the act authorizes and directs the Secretary of the Interior to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take (for example, hunting seasons for ducks and geese). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

The *Marine Mammal Protection Act* prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. See <http://www.fws.gov/laws/lawsdigest/marmam.html> for more information.

The *Magnuson-Stevens Fishery Management and Conservation Act* (particularly the 1996 amendments) requires regional fishery management councils with the assistance of NMFS to delineate Essential Fish Habitat for all managed species, for the purpose of maintaining sustainable fisheries. See <http://swr.nmfs.noaa.gov/hcd/efhprim.htm> for more information.

THREATENED AND ENDANGERED SPECIES

Management Policies 2006 and Natural Resources Management Guidelines (*Director's Order 77*) direct the National Park Service to "encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man and to enrich the understanding of the ecological systems and natural resources important to the Na-

tion...” Policies and guidelines for natural resources direct that the park must (1) identify and complete the inventories of natural resources for baseline information; (2) minimize impacts of human activities, developments, and uses on marine and terrestrial resources; (3) continue to close areas to protect nests; and (4) manage endangered, threatened, and candidate species.

The *Endangered Species Act of 1973* provides strict legal protection for endangered and threatened species, as well as those special concern species that may be in jeopardy of extinction, and for which special protection under federal and state law is afforded. The federal list of plants and animals is published in 50 CFR 17.11-12, and is administered by the U.S. Fish and Wildlife Service (USFWS). Special status species of plants and wildlife are included in this section. If the National Park Service determines that an action may adversely affect a federally listed species, consultation with the U.S. Fish and Wildlife Service (USFWS) is required to ensure that the action would not jeopardize the species’ continued existence or result in the destruction or adverse modification of critical habitat.

The *Bald and Golden Eagle Protection Act of 1940*, as amended, provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit. “Take” includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

WETLANDS

Under section 404 of the *Clean Water Act*, the U.S. Army Corps of Engineers regulate the discharge of dredged or fill material resulting from water resources projects (such as dams or levees) into the waters of the U.S. through a permit program. The section 404(b)(1) guidelines are the substantive criteria by which proposed dredged material discharge actions are evaluated. The U.S. EPA also maintains general environmental oversight, including section 404(c) permit veto authority, if there will be an “unacceptable adverse effect.” The basic premise of the program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation’s waters would be significantly degraded.

Executive Order 11990: Protection of Wetlands requires federal agencies to minimize destruction, loss, or degradation of wetlands and to preserve and enhance natural and beneficial values of wetlands in carrying out the agency’s responsibilities. Also, each agency must consider factors relevant to effects on the survival and quality of wetlands when proposing an action.

WATER RESOURCES

The objective of the *Clean Water Act (CWA)*, or Federal Water Pollution Control Act of 1972, and its amendments is to “restore and maintain the chemical, physical and biological integrity of the nation’s waters.” The goal of the Clean Water Act is to produce waters of the United States that are “fishable and swimmable.” A primary means for evaluating and protecting water quality is the establishment and enforcement of water quality standards. Under the Clean Water Act, the federal government delegated responsibility for establishing water quality criteria to each state, subject to approval by the EPA. Water quality standards consist of three parts: 1) designated beneficial uses of water [e.g., drinking, recreation, aquatic life]; 2) numeric criteria for physical and chemical characteristics for each type of designated use; and 3) an “antidegradation” provision to protect uses and water quality.

Management Policies 2006 states that the National Park 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 the parks.” *Management Policies 2006* also state that the National Park Service will “take all necessary actions to maintain or restore the quality of surface waters and groundwaters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations.”

CULTURAL RESOURCES

The *National Historic Preservation Act (NHPA)*, as amended, requires in §106 that federal agencies with direct or indirect jurisdiction over undertakings take into account the effect of those undertakings on properties that are listed on, or eligible for listing on, the National Register of Historic Places. This act and its implementing regulations provide guidance for deciding whether cultural resources are of sufficient importance to be determined eligible for listing on the National Register of Historic Places. The NHPA uses the term “historic properties,” to mean all prehistoric and historic sites, buildings, structures, and objects included in, or eligible for inclusion in, the National Register of Historic Places. Regulations that guide the implementation of NHPA are contained in 36 CFR, Part 800 (36 CFR 800).

The management and protection of cultural resources are guided by a variety of laws and policies, including:

- National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800;
- Antiquities Act of 1906;
- NPS Organic Act of 1916;
- Historic Sites Act of 1935;
- Archeological and Historic Preservation Act of 1974;
- Archeological Resources Protection Act of 1979;
- General Authorities Act of 1976;
- Management of Museum Properties Act of 1955, as amended;
- National Environmental Policy Act of 1969;
- Executive Order 11593;
- *Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation*;
- *Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation with Guidelines for the Treatment of Cultural Landscapes*;
- Departmental Manual 411 DM 1-3, Managing Museum Property;
- Departmental Manual 519 DM 1, Protection of the Cultural Environment; Departmental Manual 519 DM 2, Preservation of American Antiquities and Treatment and Disposition of Native American Cultural Items;
- Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995);
- *Management Policies 2006*;
- Director’s Order 28, *Cultural Resource Management*;

- Director's Order 28A, *Archeology*; and
- Director's Order 24, *NPS Museum Collections Management*.

COASTAL ZONE AND FLOODPLAINS

In recognition of the increasing pressures of development on the nation's coastal resources, Congress enacted the *Coastal Zone Management Act (CZMA)* in 1972 and has amended it several times (16 *United States Code* 1450 *et seq.*). The CZMA encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats.

The CZMA specifies that coastal states may protect coastal resources and manage coastal development. A state with an OCRM-approved program can deny or restrict any development that is inconsistent with its coastal zone management program.

Management Policies 2006 states that the National Park Service, in managing floodplains on park lands, “will (1) manage for the preservation of floodplain values; (2) minimize potentially hazardous conditions associated with flooding; and (3) comply with the NPS Organic Act and all other federal laws and executive orders related to the management of activities in flood-prone areas, including Executive Order 11988 (Floodplain Management), the National Environmental Policy Act, applicable provisions of the Clean Water Act, and the Rivers and Harbors Appropriation Act of 1899.” Specifically, the National Park Service will “protect, preserve, and restore the natural resources and functions of floodplains.”

Executive Order 11988, Floodplain Management, which in part addresses coastal areas, mandates all federal agencies to develop agency-specific guidance, provide leadership, and take action to:

- Reduce the risk of flood loss;
- Minimize the impact of floods on human safety, health, and welfare; and
- Restore and preserve the natural and beneficial values served by floodplains.

APPENDIX B: CONSULTATION AND CORRESPONDENCE



"Managing and conserving natural, cultural, and recreational resources"

In Reply Refer to:
SHPO-2007-1910 (34857)
Scoping

TD 12/14/07

December 10, 2007

Kathy M. Davis, Superintendent
U. S. Department of the Interior, National Park Service
Montezuma Castle and Tuzigoot National Monuments
527 S. Main Street
P. O. Box 219
Camp Verde, AZ 86322

Janet Napolitano
Governor

**State Parks
Board Members**

Chair
William C. Cordasco
Flagstaff

Arlan Colton
Tucson

William C. Scalzo
Phoenix

Reese Woodling
Tucson

Tracey Westerhausen
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William C. Porter
Kingman

Mark Winkelman
State Land
Commissioner

Kenneth E. Travous
Executive Director

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
www.azstateparks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

Director's Office Fax:
602.542.4188

RE: Scoping letter—notice of drafting of General Management Plan by Intermountain Region of the National Park Service for Montezuma Castle and Tuzigoot National Monuments.

Dear Ms. Davis:

Thank you for notifying the Arizona State Historic Preservation Office of plans to draft a General Management Plan (GMP) for Montezuma Castle and Tuzigoot, in which management direction for the next 20 years will be established. We agree that eventual implementation of the GMP has the potential to affect National Register-eligible properties, and preserving Arizona's cultural resources is essential.

We look forward to receiving a copy of the GMP, and consulting with your office pursuant to the National Historic Preservation Act as implemented by 36 C.F.R. 800. As always, we appreciate your continued cooperation with this office in complying with the historic preservation requirements for federal undertakings. If you have any questions or concerns, ask to speak with Ann Howard at (602) 542-7138, email ahoward@azstateparks.gov, or feel free to contact me at (602) 542-7137, email cgibson@azstateparks.gov.

Sincerely,

Connie Thompson Gibson

Connie Thompson Gibson, RPA
Archaeologist & Compliance Specialist
Arizona State Historic Preservation Office

REFERENCES



**United States Department of the Interior
NATIONAL PARK SERVICE**

Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Terry O. Enos
Chairperson
AkChin Indian Community
42057 W. Peters and Nall Road
Maricopa, AZ 85239

Dear Mr. Terry O. Enos:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

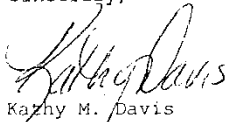
The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at the AkChin Indian Community. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



**United States Department of the Interior
NATIONAL PARK SERVICE**

Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Richard P. Narcia, Sr.
Governor
Gila River Indian Community
P.O. Box 97
Sacaton, AZ 85247

Dear Mr. Richard P. Narcia, Sr.:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

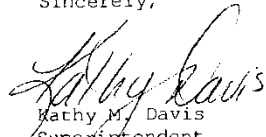
The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at the Gila River Indian Community. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper

REFERENCES



United States Department of the Interior

NATIONAL PARK SERVICE

Montezuma Castle and Tuzigoot National Monuments

Post Office Box 219

Camp Verde, Arizona 86322



H4217 (TUZI MOCA)

September 25, 2003

CERTIFIED MAIL: Return Receipt Requested

Mr. Wayne Taylor, Jr.
Chairman
The Hopi Tribe
P.O. Box 123
Kykotsmovi, AZ 86039

Dear Mr. Wayne Taylor, Jr.:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic Preservation
Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

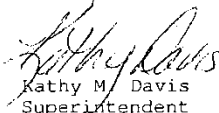
Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at Kykotsmovi, Arizona and we received a reply letter from Mr. Leigh J. Kuwanwisiwma, Director of the Hopi Cultural Preservation Office, indicating the Hopi Tribe's wish to participate in the development of the General Management Plan for Montezuma Castle and Tuzigoot National Monuments. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by Tuzigoot National Monument

and Montezuma Castle / Montezuma Well National Monument and the National Park Service's Denver Service Center (DSC).

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



Hopi Cultural Preservation Office

Received

SEP 22 2003

DSC-PSD

Wayne Taylor, Jr.
Chairman

Caleb Johnson
Vice Chairman

September 15, 2003

Kathy M. Davis, Superintendent
Montezuma Castle and Tuzigoot National Monuments
P.O. Box 219
Camp Verde, Arizona 86322-0219

Dear Superintendent Davis,

This letter is in response to the Montezuma Castle and Tuzigoot National Monuments undertaking the development of a General Management Plan. The Hopi Tribe claims cultural affiliation to the Sinagua prehistoric cultural group. Therefore, the Hopi Tribe appreciates your continuing solicitation our input and your efforts to address our concerns.

After centuries of migrations, our ancestors, *Hisatsenom*, People of Long Ago, left their ancient villages to complete their migrations at *Tuuwanasavi*, the Center of the Universe, in fulfillment of a covenant with *Maasaw*, the Earth Guardian. Montezuma Castle, *Yuvukayki*, the place of the sunken water, is a Bearstrap Clan Village. Tuzigoot, *Torsovi*, the place of the bluebird, is a Bluebird Clan Village. Montezuma's Well is *Yuvukva*, sunken spring, or *Tawapa*, sun spring.

Therefore, we wish to participate in the development of the General Management Plan, and wish to take this opportunity to establish a vision for use and management of Montezuma Castle and Tuzigoot National Monuments for the next 15 to 20 years that includes the development and implementation of a partnership between the Hopi Tribe.

And therefore, to initiate a preliminary discussion on the General Management Plan, the Hopi Cultural Preservation Office invites representatives of the National Park Service and Montezuma Castle and Tuzigoot National Monuments to our monthly administrative meetings. Please contact Lanell Yowyetewa at 928-734-3612 to confirm an appointment.

If you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

cc: Patrick Kenney, NPS, DSC, PSD, 12795 West Alameda Parkway, P.O. Box 25287, Denver, CO 80225-0287

P.O. Box 123 KYKOTS'MOVI, AZ 86039 (928) 734-3000



**United States Department of the Interior
NATIONAL PARK SERVICE**

Montezuma Castle and Tuzigoot National Monuments

Post Office Box 219

Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Jonie M. Ramos
President
Salt River Pima-Maricopa Indian Community
10005 E. Osborn Road
Scottsdale, AZ 85256

Dear Mr. Jonie M. Ramos:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

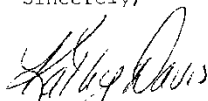
Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at the Salt River Pima-Maricopa Indian Community. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle and Tuzigoot National Monuments

Post Office Box 219
Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Edward Manuel
Chairman
Tohono O'Odham Nation
P.O. Box 837
Sells, AZ 85634

Dear Mr. Edward Manuel:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

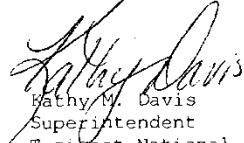
Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at the Tohono O'Odham Nation. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



United States Department of the Interior

NATIONAL PARK SERVICE
Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
Camp Verde, Arizona 86322



H4217 (TUZI MOCA)

September 25, 2003

CERTIFIED MAIL: Return Receipt Requested

Mr. Jamie Fullmer
Tribal Chairman
Yavapai Apache Nation
P.O. Box 1188
2400 West Datsi Street
Camp Verde, AZ 86322

Dear Mr. Jamie Fullmer:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic Preservation
Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting that you participate in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

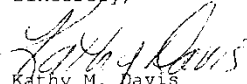
Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you, Shirley Olson, Thomas Beauty, and Chris Coder of the Yavapai Apache Nation. We are contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

I invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent

Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument
cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



**United States Department of the Interior
NATIONAL PARK SERVICE**

Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Ernest Jones, Sr.
President
Yavapai Prescott Indian Tribe
530 E. Merritt
Prescott, AZ 86301

Dear Mr. Ernest Jones, Sr.:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to the Yavapai Prescott Indian Tribe. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



United States Department of the Interior
NATIONAL PARK SERVICE
Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
Camp Verde, Arizona 86322



September 25, 2003

H4217 (TUZI MOCA)

CERTIFIED MAIL: Return Receipt Requested

Mr. Arlen Quetawki
Governor
Zuni Pueblo
P.O. Box 339
Zuni, NM 87327

Dear Mr. Arlen Quetawki:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic
Preservation Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan, however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting your participation in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at Zuni Pueblo. We are now contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with the assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

We invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928)567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent
Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument

cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



United States Department of the Interior

NATIONAL PARK SERVICE

Montezuma Castle and Tuzigoot National Monuments

Post Office Box 219

Camp Verde, Arizona 86322



H4217 (TUZI MOCA)

September 25, 2003

CERTIFIED MAIL: Return Receipt Requested

Mr. Dan Simplicio
Councilman and NAGPRA Contact
Zuni Pueblo
P.O. Box 339
Zuni, NM 87327

Dear Mr. Dan Simplicio:

Reference: Tuzigoot National Monument Montezuma Castle / Montezuma Well
National Monument General Management Plan

Subject: Compliance with Section 106 of the National Historic Preservation
Act

The National Park Service proposes to develop and subsequently implement a general management plan (GMP) for Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument in Arizona. We are just beginning our data gathering efforts for this plan however its eventual implementation may affect resources listed on or potentially eligible for the National Register of Historic Places. Therefore, in accordance with 36 CFR 800.3 (f)(2), we are requesting that you participate in the Section 106 process for the general management plan to ensure historic resources are adequately considered during the preparation of this GMP.

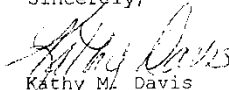
Areas within Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument are important in the history of American Indian Tribes. Your special knowledge of the area's history and culture is important to the accuracy and adequacy of our planning effort. A newsletter describing this planning effort was mailed to you at Zuni Pueblo. Now, we are contacting you on a Government-to-Government basis to be sure any concerns you may have regarding this planning project are adequately addressed during the development of this plan.

We will continue to seek your input during the various stages of the planning process, and you will have a number of opportunities to share your ideas with us. The Tuzigoot National Monument and Montezuma Castle / Montezuma Well National Monument GMP process is being conducted by the monument staff with assistance of the National Park Service's Denver Service Center (DSC).

REFERENCES

I invite you to share the views of your tribe and any concerns about the general management planning process and look forward to working with you on this project. If you have any questions or concerns, please contact me at (928) 567-5276 X223 or by email at kathy_m_davis@nps.gov.

Sincerely,



Kathy M. Davis
Superintendent

Tuzigoot National Monument
Montezuma Castle / Montezuma Well National Monument
cc:
IMDE-Regional Director
IMDE-CNR-Ruppert
WACC-Wells
SOAR-Harper



United States Department of the Interior

NATIONAL PARK SERVICE
DENVER SERVICE CENTER
12795 W. ALAMEDA PARKWAY
P.O. BOX 25287
DENVER, COLORADO 80225-0287

In reply refer to:
1621 (DSC-PDS)
MOCA

October 10, 2003

Steve Spangle, Field Supervisor
U.S. Fish and Wildlife Service
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021

Reference: Montezuma Castle and Tuzigoot National Monuments
General Management Plan / Environmental Impact Statement
Request for List of Federal Species of Concern

Dear Mr. Spangle:

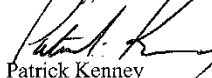
The National Park Service is preparing a general management plan for Montezuma Castle and Tuzigoot National Monuments. This letter initiates informal consultation on the proposed plan by requesting a current list of federally listed, proposed, and candidate species; designated and proposed critical habitat; and other species or habitats of concern that may inhabit the monuments, located in Yavapai County, Arizona.

The National Park Service is required to maintain an up-to date management plan for all units in the national park system. The purpose of this plan is to ensure the park has a clearly defined direction for resource protection and visitor use. General management plans will be reviewed and revised as necessary to keep them current. It is anticipated that such reviews will be needed every 15 to 20 years.

Since Montezuma Castle and Tuzigoot National Monuments current general management plans are over 25 years old. The National Park Service believes that preparing a new plan is critical for the monuments. In preparing this plan, the National Park Service will comply with the National Environmental Policy Act, Endangered Species Act and other relevant federal legislation. An environmental impact statement will be prepared for the plan.

Enclosed you will find a brochure that provides additional information on the monuments. If you have any questions or comments, please contact me at (303) 969-2674. Thank you for your time and consideration.

Sincerely,


Patrick Kenney
Planning Team Leader

Enclosure



United States Department of the Interior

U.S. Fish and Wildlife Service
 Arizona Ecological Services Field Office
 2321 West Royal Palm Road, Suite 103
 Phoenix, Arizona 85021-4951
 Telephone: (602) 242-0210 Fax: (602) 242-2513



Received

OCT 28 2003

DSC-PSD

In Reply Refer to:

AESO/SE
 02-21-04-I-0007

October 22, 2003

Memorandum

To: Planning Team Leader, National Park Service, Denver, Colorado
 (Attn: Patrick Kenney)

From: Field Supervisor

Subject: Montezuma Castle and Tuzigoot National Monument

Thank you for your recent request for information on threatened or endangered species, or those that are proposed to be listed as such under the Endangered Species Act of 1973, as amended (Act), which may occur in your project area. The Arizona Ecological Service Field Office has posted lists of the endangered, threatened, proposed, and candidate species occurring in each of Arizona's 15 counties on the Internet. Please refer to the following web page for species information in the county where your project occurs: <http://arizonaes.fws.gov>. If you do not have access to the Internet or have difficulty obtaining a list, please contact our office and we will mail or fax you a list as soon as possible.

After opening the web page, find Arizona County/Species List on the main page. Then click on the county of interest. The arrows on the left will guide you through information on species that are listed, proposed, candidates, or have conservation agreements. Here you will find information on the species' status, a physical description, all counties where the species occurs, habitat, elevation, and some general comments. Additional information can be obtained by going back to the main page. On the left side of the screen, click on Document Library, then click on Documents by Species, then click on the name of the species of interest to obtain General Species Information, or other documents that may be available. Click on the cactus icon to view the desired document.

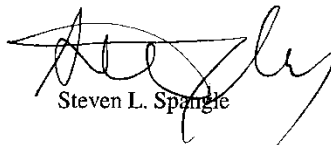
Please note that your project area may not necessarily include all or any of these species. The information provided includes general descriptions, habitat requirements, and other information for each species on the list. Under the General Species Information, citations for the Federal Register (FR) are included for each listed and proposed species. The FR is available at most public libraries. This information should assist you in determining which species may or may not occur within your project area. Site-specific surveys could also be helpful and may be needed to verify the presence or absence of a species or its habitat as required for the evaluation of proposed project-related impacts.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. If the action agency determines that listed species or critical habitat may be affected by a federally funded, permitted, or authorized activity, the action agency will need to request consultation with us. If the action agency determines that the planned action may jeopardize a proposed species or destroy or adversely modify proposed critical habitat, the action agency will need to enter into a section 7 conference. The county list may also contain candidate species. Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend that they be considered in the planning process in the event that they become listed or proposed for listing prior to project completion.

If any proposed action occurs in or near areas with trees and shrubs growing along watercourses, known as riparian habitat, we recommend the protection of these areas. Riparian areas are critical to biological community diversity and provide linear corridors important to migratory species. In addition, if the project will result in the deposition of dredged or fill materials into waterways, we recommend you contact the Army Corps of Engineers which regulates these activities under Section 404 of the Clean Water Act.

The State of Arizona and some of the Native American Tribes protect some plant and animal species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department and the Arizona Department of Agriculture for State-listed or sensitive species, or contact the appropriate Native American Tribe to determine if sensitive species are protected by Tribal governments in your project area. We further recommend that you invite the Arizona Game and Fish Department and any Native American Tribes in or near your project area to participate in your informal or formal section 7 consultation process.

For additional communications regarding this project, please refer to consultation number 02-21-04-I-0007. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. If we may be of further assistance, please feel free to contact Brenda Smith (928-226-0614 x101) for projects in Northern Arizona, Tom Gatz (602-2420-0210 x 240) for projects in central Arizona and along the Lower Colorado River, and Sherry Barrett (520-670-4617) for projects in southern Arizona.



Steven L. Spangle

cc: John Kennedy, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

O:\Species List Letters\2004 ltrs\02-21-04-I-0007.wpd/ij



United States Department of the Interior

NATIONAL PARK SERVICE
DENVER SERVICE CENTER
12795 W. ALAMEDA PARKWAY
P.O. BOX 25287
DENVER, COLORADO 80225-0287

In reply refer to:
1621 (DSC-PDS)
MOCA

October 10, 2003

Mr. Bob Broschid
Arizona Game and Fish Department
WMHB – Project Evaluation Program
2221 W. Greenway Road
Phoenix, AZ 85021

Reference: Montezuma Castle and Tuzigoot National Monuments
General Management Plan / Environmental Impact Statement
Request for List of State Species of Concern

Dear Mr. Broschid:

The National Park Service is preparing a general management plan for Montezuma Castle and Tuzigoot National Monuments. This letter initiates informal consultation on the proposed plan by requesting a current list of state listed, proposed, and candidate species; designated and proposed critical habitat; and other species or habitats of concern that may inhabit the monuments, located in Yavapai County, Arizona.

The National Park Service is required to maintain an up-to date management plan for all units in the national park system. The purpose of this plan is to ensure the park has a clearly defined direction for resource protection and visitor use. General management plans will be reviewed and revised as necessary to keep them current. It is anticipated that such reviews will be needed every 15 to 20 years.

Since Montezuma Castle and Tuzigoot National Monuments current general management plans are over 25 years old. The National Park Service believes that preparing a new plan is critical for the monuments. In preparing this plan, the National Park Service will comply with the National Environmental Policy Act, Endangered Species Act and other relevant federal legislation. An environmental impact statement will be prepared for the plan.

Enclosed you will find a brochure that provides additional information on the monuments. If you have any questions or comments, please contact me at (303) 969-2674. Thank you for your time and consideration.

Sincerely,

Patrick Kenney
Planning Team Leader

Enclosure



THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT

2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • AZGFD.COM

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October 30, 2003

Received

NOV 03 2003

DSC-PSD

Mr. Patrick Kenney
NPS – Denver Service Center
12795 W. Alameda Parkway
PO Box 25287
Denver, CO 80225-0287

Re: Special Status Species Information for **Montezuma Castle and Tuzigoot National Monuments, General Management Plan and Environmental Impact Statement.**

Dear Mr. Kenney:

The Arizona Game and Fish Department (Department) has reviewed your request, dated October 10, 2003, regarding special status species information associated with the above-referenced project areas. The Department's Heritage Data Management System (HDMS) has been accessed and current records show that the special status species listed on the attachment have been documented as occurring in the project areas (5-mile buffer). In addition, there are Designated Critical Habitats for the loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), and razorback sucker (*Xyrauchen texanus*) – Verde River in the Tuzigoot National Monument. Designated Critical Habitats for the spikedace and loach minnow (Beaver Creek) also occur in the Montezuma Castle National Monument.

The Department's HDMS data are not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity.

Making available this information does not substitute for the Department's review of project proposals, and should not decrease our opportunities to review and evaluate new project proposals and sites. The Department is also concerned about other resource values, such as other wildlife, including game species, and wildlife-related recreation. The Department would appreciate the opportunity to provide an evaluation of impacts to wildlife or wildlife habitats associated with project activities occurring in the subject area, when specific details become available.

REFERENCES

Mr. Patrick Kenney

October 30, 2003

2

If you have any questions regarding the attached species list, please contact me at (602) 789-3618. General status information, state-wide and county distribution lists, and abstracts for some special status species are also available on our web site at: <http://www.azgfd.com/hdms>.

Sincerely,



Sabra S. Schwartz

Heritage Data Management System, Coordinator

SSS:ss

Attachment

cc: Bob Broscheid, Project Evaluation Program Supervisor
Rick Miller, Habitat Program Manager, Region II

AGFD #10-19-03(01)

APPENDIX C: THREATENED AND ENDANGERED SPECIES

Table C.1 presents the species listed by the U.S. Fish and Wildlife Service as endangered, threatened, proposed, or candidates for listing and having potential to occur in Yavapai County, Arizona. The Arizona Game and Fish Department does not make any distinctions with regard to status such as threatened or endangered; all state special status species are classified as Wildlife of Special Concern. The Arizona Game and Fish Department Heritage Data Management System provided lists of the state special status species that may be found within five miles of Montezuma Castle or Tuzigoot national monuments.

**TABLE C.1: ENDANGERED, THREATENED, CANDIDATE, AND SPECIAL STATUS SPECIES
WITH POTENTIAL TO OCCUR IN YAVAPAI COUNTY, ARIZONA**

Common Name	Scientific Name	Status ^{a/}
Plant		
Arizona cliffrose	<i>Purshia subintegra</i>	FE, AWSC
Invertebrate		
Page springsnail	<i>Pyrgulopsis morrisoni</i>	FC, AWSC
Reptile		
Northern Mexican garter snake	<i>Thamnophis eques megalops</i>	AWSC
Amphibians		
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	FT, AWSC
Lowland leopard frog	<i>Rana yavapaiensis</i>	AWSC
Fish		
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FE, AWSC
Desert pupfish	<i>Cyprinodon macularius</i>	FE, AWSC
Gila chub	<i>Gila intermedia</i>	FE, AWSC
Gila topminnow	<i>Poeciliopsis occidentalis</i>	FE, AWSC
Headwater chub	<i>Gila nigra</i>	FC, AWSC
Razorback sucker	<i>Xyrauchen texanus</i>	FE, AWSC
Roundtail chub	<i>Gila robusta</i>	AWSC
Spikedace	<i>Meda fulgida</i>	FT, AWSC
Birds		
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT ^{b/} , AWSC
Belted kingfisher	<i>Ceryle alcyon</i>	AWSC
California brown pelican	<i>Pelecanus occidentalis californicus</i>	FE, AWSC
Common black hawk	<i>Buteogallus anthracinus</i>	AWSC
Mexican spotted owl	<i>Strix occidentalis lucida</i>	FT, AWSC
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, AWSC
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	FC, AWSC
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE, AWSC
Mammal		
Western red bat	<i>Lasiurus blossevillei</i>	AWSC

^{a/} FE = federal endangered; FT = federal threatened; FC = federal candidate; AWSC = Arizona wildlife of special concern

^{b/} The bald eagle was recently delisted (June 28, 2007), although the delisting is not administratively complete.



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

MONTEZUMA CASTLE NATIONAL MONUMENT • TUZIGOOT NATIONAL MONUMENT
GENERAL MANAGEMENT PLAN/ENVIRONMENTAL ASSESSMENT

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