NATIONAL PARK SERVICE
US DEPARTMENT OF THE INTERIOR

Lake Meredith National Recreation Area
Texas

CONSTRUCTION OF THE NORTH SIDE TRAIL SYSTEM ENVIRONMENTAL ASSESSMENT

LAKE MEREDITH NATIONAL RECREATION AREA

August 2016

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US DEPARTMENT OF THE INTERIOR – NATIONAL PARK SERVICE

LAKE MEREDITH NATIONAL RECREATION AREA, TEXAS

ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION OF THE NORTH SIDE TRAIL SYSTEM

The National Park Service (NPS) has prepared this environmental assessment (EA) to analyze the impacts of constructing a sustainable, non-motorized, multi-use recreational trail at Lake Meredith National Recreation Area (the park). The demand for recreational uses such as hiking, mountain biking, and horseback riding continues to increase both regionally and nationally, and the park represents a large portion of the publicly available land in the Texas panhandle region. Currently, the north side of the park has no formal recreational trails. A new multi-use trail system on the north side of the park is needed to address the lack of land-based recreational opportunities in the region and to increase the availability of interpretive resources in the park.

This EA evaluates two alternatives. Alternative A is the "no-action" alternative, which represents the current condition of the project area. Alternative A represents the baseline condition against which the impacts of the action alterative will be measured. Alternative B (NPS preferred alternative) involves the construction of a North Side Trail System (proposed trail system) using new trail construction, existing administrative dirt roads, and modified social trails. The proposed trail system would cover the area from Lower Plum to Hackberry Butte. The trail head would be located at the Lower Plum Creek campground, locally referred to as the Meadows, to take advantage of existing park infrastructure (e.g., all-weather access road, parking, outback restroom, and picnic tables). The proposed trail system would consist of four phases of primitive trails resulting in approximately 23 miles of sustainable multi-use trails that would be available for pedestrian, bicycle, and horse use. Phase 1 would be located in the Plum Creek area; phase 2 would cover Devils to Big Canyon; phase 3 would connect Big Canyon to Aztec Canyon; and phase 4 would begin at Aztec Canyon and would connect to the Mullinaw Trail. This EA analyzes all four phases of the proposed trail system; however, construction of each phase would occur only as funding becomes available.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that (1) analyzes a reasonable range of alternatives to meet project objectives; (2) evaluates potential issues and impacts on park resources and values; and (3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics that have been addressed in this document because significant impacts may exist include vegetation (including nonnative and exotic species), soils and erosion, and visitor use and experience and recreational opportunities. All other resource topics have been dismissed because the project would not result in significant impacts on these resources and a full analysis was not considered to be necessary. External scoping was conducted to assist with the development of this document, and the majority of respondents expressed their support for the development of the proposed trail system at the park.

Public Comment

If you wish to comment on this EA, you may do so online at the NPS website "Planning, Environment, and Public Comment" at http://parkplanning.nps.gov/lamr or you may mail comments to the address below. This EA will be available for public review for 30 days ending **August 29, 2016**. Before including your address, phone number, email 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 in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please address written comments to:

Superintendent
Construction of the North Side Trail System
Lake Meredith National Recreation Area
P.O. Box 1460
Fritch, Texas 79036

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PURPOSE AND NEED

INTRODUCTION

Lake Meredith National Recreation Area (the park) was formally established in 1990 by an act of Congress "in order to provide for public outdoor recreation use and enjoyment of the lands and waters associated with Lake Meredith in the State of Texas, and to protect the scenic, scientific, cultural, and other values contributing to the public enjoyment of such lands and waters, there is hereby established the Lake Meredith National Recreation Area […]." The park is located approximately 35 miles north of Amarillo, Texas (figure 1) in Moore, Potter, and Hutchinson Counties and serves as a resource for water-based recreational activities in the region (NPS 2010).

The purpose of this environmental assessment (EA) is to examine the environmental impacts associated with constructing a sustainable, non-motorized, multi-use trail system on the north side of the park. The proposed trail system would consist of four phases of primitive trails resulting in approximately 23 miles of sustainable multi-use trails that would be available for pedestrian, bicycle, and horse use. The 23 miles would be a combination of new trail construction, upgraded existing social trails, and connected dirt roads.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 Code of Federal Regulations (CFR) Parts 1500–1508; NPS Director's Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2011) and its accompanying handbook (NPS 2015a); section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations, 36 CFR Part 800; and section 7 of the Endangered Species Act (ESA). This NEPA process is being used to comply with NHPA section 106 and ESA section 7.

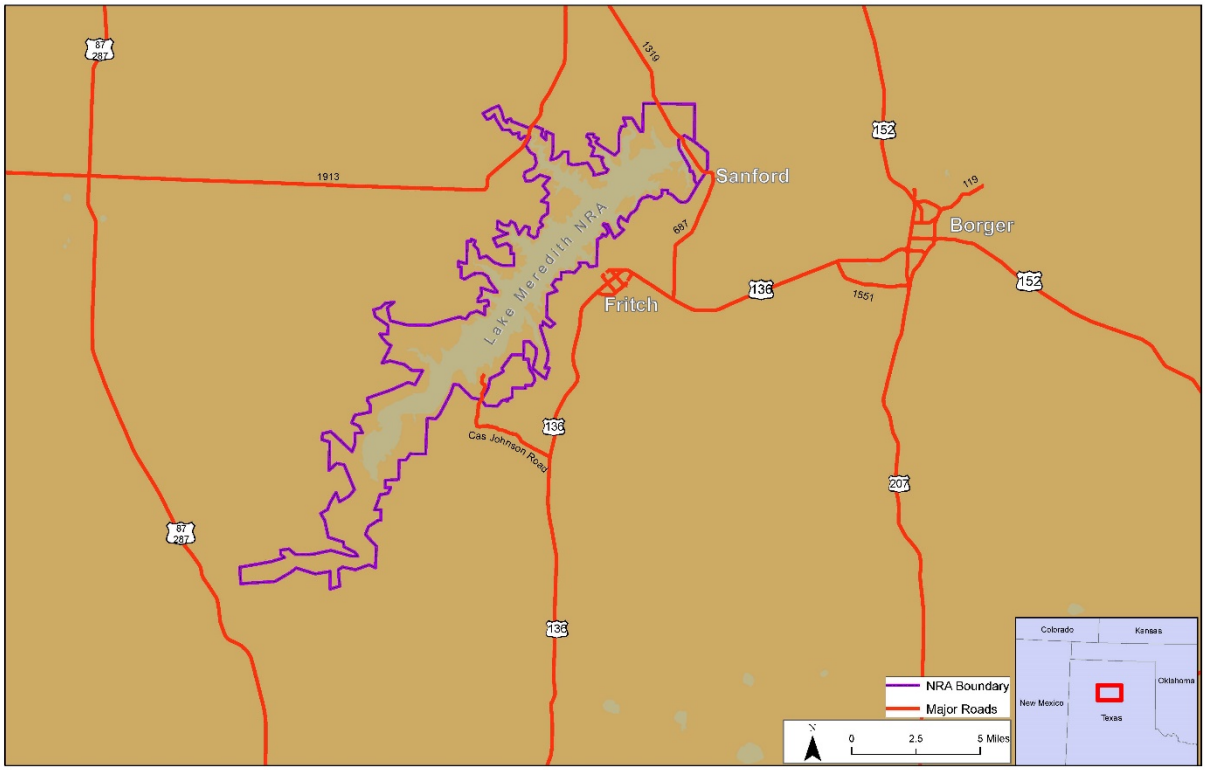

FIGURE 1: PARK LOCATION

BACKGROUND

The park includes approximately 45,000 acres and is the largest public landmass in the panhandle region providing diverse recreational opportunities. Although water-based opportunities such as fishing and boating are provided, minimal trail mileage is available to visitors for hiking, biking, and horse use. The park also lacks interpretive facilities that would allow visitors to understand the natural and cultural resources that give the park its identity and demonstrate its significance. Adequate interpretive opportunities are an important method of providing public education and promoting the stewardship of park resources.

Existing hiking trail systems at the park include Harbor Bay Trail, Mullinaw Trail, and South Turkey Creek Trail. The Harbor Bay Trail System consists of 5.2 miles of gently rolling hills, steep slopes with steps, and switchbacks. The Mullinaw Trail System covers 4.3 miles of relatively flat trail. The main portion of the trail travels along the Canadian River with other portions traveling through local foliage. The South Turkey Creek Trail System is fairly level, winding around nearby hills. Portions of this trail are currently under construction. When completed it will be approximately 12 miles long. Trail completion is anticipated later in 2016 (NPS 2016a; NPS, Wimer, pers. comm., 2016b).

Within the park, mountain bike trails are currently available in both the Harbor Bay and Mullinaw Trail Systems (NPS 2015b). Interest in mountain biking in the United States has increased rapidly in recent years, likely because of technological improvements in mountain bike design, which allow more people to participate in this activity. According to a National Survey on Recreation and the Environment, in 2003, general bicycling was the second most popular land-based recreation activity in the United States, and an estimated 45.2 million people biked on backcountry roads, trails, or cross country at least once in the 12 months prior to the survey. The number of individuals participating in any bicycling activity increased from 77.8 million to 88.3 million participants between the 1994–1995 and 2005–2009 reporting periods (Cordell 2010). In the Texas panhandle, Palo Duro Canyon is a premier location for mountain bikers (TPWD 2016a). Although Palo Duro Canyon provides a destination for mountain bikers in the region, additional public trails in the panhandle and in the park would help address the continuing increase in demand for access to mountain bike trails.

Several areas of the park are ideal for horseback riding. Plum Creek and McBride Canyon offer corrals and dirt roads and trails for riding. The McBride Canyon and Mullinaw Trail System are located southeast of the Lake Meredith and provide picnic tables, grills, and vault toilets. Horse corrals are available at the Mullinaw Trail campground area. Plum Creek is located southwest of Lake Meredith where the Devil's Canyon Trail can be accessed. Plum Creek provides picnic tables, grills, vault toilets, horse corrals, and automatic self-filling horse-water tank (NPS 2015c). While trails on the north side of the park are available for horseback riding, some portions of these trails incorporate modified social trails that were created without following NPS policies and standards. The development of formal trails in this areas would help to accommodate the continuing demand for horseback riding while adhering to NPS policies and standards.

The water level of Lake Meredith has become an item of concern for park staff, park visitors, and local communities. Water levels at Lake Meredith have reached a record low each of the last 10 years until 2015, when water levels began increasing. Dropping water levels in Lake Meredith have resulted in a substantial loss of public access to the reservoir and a corresponding reduction in water-based recreational opportunities. Visitation to the park has continued to decline over the last 10 years with record low visitation in 2012. Lower water levels and reduced access could be a contributing factor to this decline in use. Although water levels have risen in the past year, currently holding at 65 feet, they are not expected to increase substantially in the near future (NPS 2010; NPS 2015d; TWDB 2015; NPS, Wimer, pers. comm., 2016b). The addition of a sustainable, multiuse trail system on the north side of the park could provide visitors with an alternative form of recreation.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The park proposes to construct a sustainable, multiuse trail system for pedestrian, bicycle, and horse use on the north side of the park in Moore and Potter Counties, Texas. Park staff continue to address the need for the development of non-motorized, land-based recreational activities. The proposed North Side Trail System would provide non-vehicular access to Devils Canyon and Big Canyon and would connect to the Mullinaw Trail System and the South Side Trail System.

Currently, the north side of the park includes only a series of modified social trails that were created without following NPS policies and standards. Development of a sustainable, multiuse trail system on the north side of the park would involve new trail construction, convert administrative dirt roads, and modify existing social trails. This development would follow all applicable NPS policies and standards.

A sustainable trail system consists a properly located and constructed trail that reduces erosion and considers soil type, grade, erosion control structures, and rock retaining walls; therefore, requiring little maintenance while protecting natural and cultural resources.

The purpose of this project is to provide visitors with a wider range of non-water-based, land-based recreational experiences and to provide public access to sections of the park that are currently difficult to access. The proposed project is needed to accomplish the following objectives:

- Protect cultural resources by controlling access to certain areas.
- Protect natural resources by reducing habitat fragmentation, erosion, and the overall amount of land disturbance.
- Provide additional recreational experiences for visitors.

PROJECT AREA EVALUATED FOR IMPACTS

The project area evaluated for impacts includes an approximately 100-foot-wide corridor surrounding all phases of the proposed trail system as shown in figure 2 and as described in detail in the description of alternatives section.

ISSUES AND IMPACT TOPICS

Potential issues associated with the construction and maintenance of the proposed trail system at the park were identified during internal and external scoping. These issues formed the basis for the impact topics to be analyzed in this EA. Impact topics for this project have been identified on the basis of federal laws, regulations, and orders, NPS *Management Policies 2006*, and NPS knowledge of the resources at the park. Impact topics carried forward for further analysis in this EA are listed below along with the reasons why the particular impact topic is further analyzed.

Vegetation

The construction of the proposed trail system would require the removal of some vegetation and could result in damage to vegetation adjacent to the trail. Long-term use and maintenance of the trail would likely prohibit regrowth of this vegetation in portions of the proposed trail corridor. In addition, construction vehicles could transport invasive plant seeds on their tires and introduce invasive plant species during construction activities. Allowing new recreational use in areas not historically accessed by the public could also contribute to the spread of invasive plant species. Providing access trails would afford park staff better access to areas where invasive species could be controlled or eradicated and could provide a beneficial effect. Providing clear trail access to visitors would also likely reduce damage vegetation outside of designated trails. These actions are considered to have measurable effects; therefore, the topic of vegetation was carried forward for further analysis in this EA.

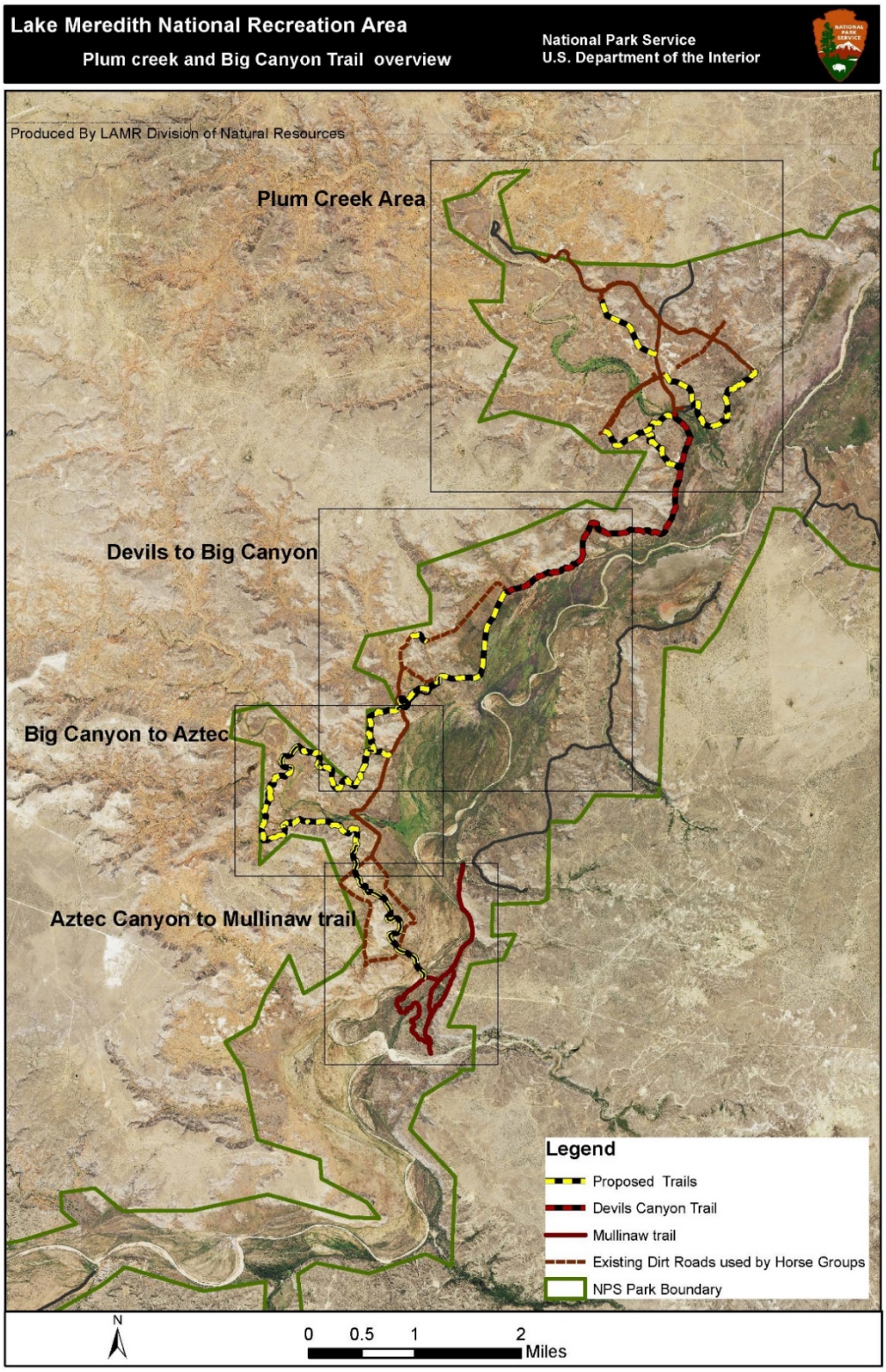

FIGURE 2: PROPOSED NORTH SIDE TRAIL SYSTEM

Soils and Erosion

More than 67% of the land base at the park comprises slopes greater than or equal to 12%. Soils on steep slopes are susceptible to water and wind erosion. In addition, erosion tends to increase where vegetation has been removed and grading activities have occurred. Although the proposed trail system would be primitive, some grading activities would be required to ensure that it has a reasonable slope and width to allow for safe use. As a result of construction and visitor use, impacts on soils resources would be measurable and could also produce incidental impacts on water quality from erosion and sedimentation. Therefore, this impact topic was carried forward for further analysis.

Visitor Use and Experience/Recreational Opportunity

The park was established, in part, to provide for public use and enjoyment of the lands and waters associated with Lake Meredith. Historically, recreational activities at the park have been primarily water-based (e.g., fishing, boating, water skiing, and swimming). However, decreasing water levels in the lake have led to reduced access to water-based activities. In addition, opportunities for hiking and biking at the park are limited. The proposed trail system would provide additional non-water-based recreational opportunities and improve visitor enjoyment of the park. Therefore, this topic is carried forward for further analysis.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Some impact topics have been dismissed from further consideration, as listed below. The rationale for dismissing these specific topics is stated for each resource.

Wildlife

According to the NPS *2006 Management Policies*, NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2006). The general area surrounding the proposed trail corridor may provide habitat for several native wildlife species that depend on the mixed grassland habitats that exist along the tops of the mesas or the more riparian habitat types found along the shore or the lake. Native wildlife in the project area may include several species of birds, mammals, reptiles, and amphibians.

Common mammals known to occur in and around the park and the project area include mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus)*, coyotes (*Canis latrans*) porcupines (*Erethizon dorsatum*), raccoons (*Procyon lotor*), skunks (*Spilogale putorius, Mephitis mephitis*), ground squirrels (*Spermophilus tridecimlineatus*), rabbits (*Sylvilagus audubonii, Sylvilagus floridanus, Lepus californicus*), pocket gophers (*Geomys bursarius*), moles (*Scalopus aquaticus*), a few bats, and several varieties of rats and mice. Turtles, lizards, frogs, and snakes, including two poisonous species (prairie rattlesnake [*Crotalus viridis*] and western diamondback rattlesnake [*Crotalus atrox*]) can be found in the park (NPS 2010).

Prominent birdlife consists of wild turkeys (*Meleagris gallopavo*), northern bobwhites (*Colinus virginianus*), scaled quails (*Callipepla squamata*), mourning doves (*Zenaida macroura*), greater roadrunners (*Geococcyx californianus*), and red-winged blackbirds (*Agelaius phoeniceus*). The park lies along the Central Flyway, which is a major north-south bird migration route located between the arid region to the west and the more moist landscapes to the east. Large numbers of ducks, geese, and other migratory birds occur seasonally to use open water and wetland areas during the fall through spring months (NPS 2010).

Protection under the Migratory Bird Treaty Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition, this act serves to protect environmental conditions for migratory birds from pollution or other ecosystem degradations. Although migratory birds use the open water and

wetland areas, the immediate project area contains little to no suitable habitat for migratory birds. No known nesting sites occur in the project area, and these lands are not vital for foraging or roosting (NPS 2010; NPS, Wimer, pers. comm., 2016b).

Construction-related noise could potentially disturb transient bird species, but these adverse impacts would be temporary, lasting only during construction, and would be slight because suitable habitat for transient birds is found throughout the region. Construction and use of the proposed trail system would disturb wildlife and wildlife habitat; however, given that construction effects would be short term and that the trail would consist of a natural surface and would not involve motorized use, impacts on wildlife are expected to be minimal and would decrease once construction is complete. Any disturbed areas created by construction activities outside of the new trail corridor, such as any staging areas, would be revegetated and rehabilitated following construction activities. While impacts on wildlife from continued visitor use would exist, these impacts would be limited because human activity would be confined to a narrow corridor and would not involve motorized use. Natural areas surrounding the trail corridor would remain in their current condition and would continue to offer habitat for wildlife.

Because the effects on wildlife and wildlife habitat from the proposed project would be temporary and slight in the long term, the topic of wildlife was dismissed from further consideration.

Special-Status Species

The ESA requires examination of impacts on all federally listed threatened, endangered, and candidate species. Section 7 of the ESA requires all federal agencies to consult with the US Fish and Wildlife Service (USFWS) or designated representative to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the NPS *Management Policies 2006* and Director's Order 77: *Natural Resources Management Guidelines*, require NPS to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species (NPS 2006).

To comply with the ESA, the park reviewed the federally listed species that have the potential to occur in the project area. The species list below was produced by the USFWS Environmental Conservation Online System's Information for Planning and Conservation (IPaC) website for Moore and Potter Counties in Texas (USFWS 2016). The Texas Parks and Wildlife Department (TPWD) list of rare species was obtained on the agency's website to identify state-listed species that could potentially occur in or near the project area (TPWD 2016b).

According to the USFWS and TPWD websites, the following federally and state-recognized threatened and endangered species have the potential to occur in the two counties.

TABLE 1: FEDERAL AND STATE RECOGNIZED SPECIES OF CONCERN

Common Name	Scientific Name	Federal Status	State Status
Birds			
Least tern	*Sterna antillarum*	E	E
Piping plover	*Charadrius melodus*	T	
Red knot	*Calidris canutus rufa*	T	
Whooping crane	*Grus americana*	E	
Arctic peregrine falcon	*Falco peregrinus tundrius*	Delisted	T
Peregrine falcon	*Falco peregrinus*	Delisted	E
Bald eagle	*Haliaeetus leucocephalus*	Recovery	T
Lesser prairie-chicken	*Tympanuchus pallidicinctus*	C	

Common Name	Scientific Name	Federal Status	State Status
Mammals			
Black bear	*Ursus americanus*	T	T
Black-footed ferret	*Mustela nigripes*	E	E
Gray wolf	*Canus lupis*	T	E
Reptiles			
Texas horned lizard	*Phrynosoma cornutum*		T
Fish			
Arkansas river shiner	*Notropis girardi*	E	E

Source: USFWS 2016; TPWD 2016b

According to the IPaC website, no critical habitat is located in Moore or Potter Counties. Park staff have indicated that the identified species do not occur in the project area for the proposed trail system (NPS, Wimer, pers. comm., 2016b). Based on this information, park staff determined that activities associated with this EA would have *no effect* on federal or state recognized special-status species or critical habitat.

While no critical habitat is currently designated within the park, USFWS recently initiated an evaluation of potential critical habitat for the Arkansas River shiner in the park from the confluence of Coetas Creek and Canadian River and west to the boundary of the park. Although the Arkansas River shiner has been found in the park, no suitable habitat for this species exists in the project area for the proposed trail system. The only area where potential habitat could occur is where the proposed trail system crosses the Canadian River. A break-away swing bridge, which would not be an impediment to water flow during high water events, would be constructed at this crossing to protect the banks of the Canadian River. Construction would follow previous USFWS recommendations to preserve potential habitat for the Arkansas River shiner (NPS, Wimer, pers. comm., 2016b).

Park staff have observed wintering bald eagles and Texas horned lizards in the park. However, because eagles are not known to nest in the park, the construction and maintenance of the proposed trail system would not have any measurable impacts on eagles. Although actions associated with the construction of the trail could temporarily displace individual horned lizards from the project area, this action would not affect the overall population or habitat (NPS, Wimer, pers. comm., 2016b).

Because no federally listed threatened, endangered, proposed, or candidate species are known or likely to inhabit the project area; no designated critical habitats lie in or near the project area; and any effects on state-listed species, if present, would likely have few measurable consequences, the topic of special-status species was dismissed from further consideration in this EA. In fulfillment of USFWS consultation requirements, a memo to the file indicating that activities associated with this EA will have no effect on federally recognized special-status species is included in appendix A.

Floodplains

Executive Order 11988, “Floodplain Management,” requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. According to NPS *Management Policies 2006* (NPS 2006) and Director’s Order 77-2: *Floodplain Management* (NPS 2003), NPS is mandated to strive to preserve floodplain values and minimize hazardous floodplain conditions. Portions of the proposed trail system would be located within a mapped floodplain. The trail would be unpaved and constructed at grade and would not cause adverse impacts on flood plain functions. A break-away swing bridge would be constructed to protect the banks of the Canadian River but would not be an impediment to water flow during high water events.

This project is not subject to floodplain compliance (Statement of Findings for floodplains) because the three main concerns for floodplains (e.g., jeopardize human life, unacceptable loss of capital investments, and degradation of floodplain values) are not an issue for this project.

Therefore, this topic was dismissed from further consideration.

Archeological Resources

In addition to the NHPA and NPS 2006 *Management Policies*, Director's Order-28B: *Archeology* affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the national park system. As one of the principal stewards of America's heritage, NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the national park system reflect a commitment to the conservation of archeological resources as elements of the national heritage.

During siting of the 100-foot corridor for the proposed trail system, park staff hiked the length of the proposed trail with a qualified archeologist to ensure that no archeological sites were located in the corridor (NPS 2016c). If any areas of concern are identified during construction activities of any phase of the proposed trail system, the 100-foot trail corridor would be modified to avoid these areas, thus mitigating potential impacts on archeological resources during construction. Section 106 consultation would be completed prior to construction of each phase.

Because construction of the proposed trail system would not disturb any known archeological sites, impacts on archeological resources are not expected. If any new sites are discovered during construction, trail work would cease in the immediate area while the trail is rerouted to avoid these resources. Because impacts are not expected, this topic was dismissed from further consideration.

Ethnographic Resources

Director's Order 28: *Cultural Resource Management Guideline* (NPS 1998) defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. According to Director's Order 28 and Executive Order 13007 on sacred sites, NPS should strive to preserve and protect ethnographic resources.

In consultation with Native American tribes, park staff determined that ethnographic resources are not known to exist in the proposed project area. Native American tribes traditionally associated with the park were apprised of the proposed project during the external scoping process. Response letters received from the Kiowa Tribe and the Comanche Nation confirmed their cultural affiliations with the area, but did not indicate the presence of ethnographic resources in the project area (appendix B). Therefore, this topic was dismissed from further consideration.

Soundscapes

In accordance with NPS *Management Policies 2006* and Director's Order 47: *Sound Preservation and Noise Management*, an important component of the NPS mission is the preservation of natural soundscapes associated with national park units (NPS 2006). Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units and potentially throughout each park unit; however, acceptable human-caused sound is generally greater in developed areas and less in undeveloped areas.

The soundscape in the park comprises both human-made and natural sounds. Portions of the proposed trail system would be near roads and adjacent residential and agricultural land uses and would be subject to the sounds of vehicles, heating and cooling units, oil and gas wells, and other machinery. During hunting season, the sound of gunfire would be prevalent in areas open to hunting. Natural sounds in and around the project area include birds, wildlife, wind, and water.

The development of a sustainable, multiuse trail would not contribute to long-term impacts on the soundscape at the park because no motorized use would be allowed. The project would likely have temporary impacts on the soundscape while construction activities are conducted, e.g., human-caused sounds from equipment, vehicular traffic, and trail crews. Any sounds generated during the construction of the proposed trail would be temporary, lasting only as long as the activity is producing the sounds, and would have a minimal adverse impact on visitors, employees, and adjacent landowners. Therefore, the topic of soundscapes was dismissed from further consideration.

Socioeconomics

Construction of the proposed trail system would neither change local and regional land use nor appreciably affect local businesses or other agencies. It could provide a minimal beneficial impact to the economies of local communities because of minimal increases in revenues for local businesses that would be generated from increased visitation to the park. Trail construction would require some use of the local labor force, although it is expected that most of the construction would be accomplished through the use of volunteers and NPS staff. Because the impacts on the socioeconomic environment would be minimal, this topic was dismissed from further consideration.

Environmental Justice/Minority and Low Income Populations

Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Because the proposed trail system would be available for use by all people regardless of race or income, and the construction workforce would not be hired based on their race or income, the proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities. Therefore, this topic was dismissed from further consideration.

Indian Trust Resources

Secretarial Order 3175, “Identification, Conservation and Protection of Indian Trust Assets,” requires that any anticipated impacts on Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The land comprising the park is not held in trust by the Secretary of the Interior for the benefit of Indians or because of their status as Indians. Moreover, the management action under consideration in the EA would in no way alter the government-to-government relations between the region’s tribal nations and the NPS. Treaty rights are beyond the scope of this EA. Additionally, any actions taken to implement this EA would conform to existing laws pertaining to treaty rights. NPS would consult with tribes having treaty rights and their representatives on a government-to-government basis, and no management action would alter existing treaty rights or agreements between NPS and tribes. Therefore, this topic was dismissed from any further analysis.

Prime and Unique Farmlands

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects on prime and unique farmlands that would result in the conversion of these lands to nonagricultural uses. According to the soil surveys for Moore and Potter Counties, no designated prime farmland soils exist in the project area that could be impacted by the development of the proposed trail

system (NRCS 2015); therefore, the topic of prime and unique farmlands was dismissed from further consideration.

Climate Change and Sustainability

Although climatologists are unsure about the long-term results of global climate change, it is clear that the planet is experiencing a warming trend that affects ocean currents, sea levels, polar sea ice, and global weather patterns. Although these changes will likely affect winter precipitation patterns and amounts in the parks, it would be speculative to predict localized changes in temperature, precipitation, or other weather changes, in part because there are many variables that are not fully understood and there may be variables not currently defined. Therefore, the analysis in this document is based on past and current weather patterns and the effects of future climate changes was dismissed from further consideration.

ALTERNATIVES

This section describes the two alternatives considered by the NPS: a no-action alternative (alternative A) and an action alternative (alternative B). The alternatives presented in this section were derived from the recommendations of an interdisciplinary planning team and through feedback from the public during the external scoping process. NEPA requires that federal agencies develop a range of reasonable alternatives and provide an analysis of what impacts the alternatives could have on the human environment (the natural and physical environment and the relationship of people with that environment). However, according to Director's Order 12, if the interdisciplinary team finds that no reasonable alternatives exist and that there is no potential for significant impacts, there may be only the no-action alternative and the park's proposal (Director's Order 12, sec. 5.4 D.1), which was the outcome in this planning effort. Director's Order 12 requires that NPS identify its "Preferred Alternative" from among the alternatives evaluated.

This section also describes alternatives or alternative elements that were considered but dismissed from further consideration.

DESCRIPTION OF ALTERNATIVES CARRIED FORWARD

Alternative A: No-Action Alternative

The alternatives under consideration must include a "no-action" alternative as prescribed by 40 CFR 1502.14, which are the guiding regulations of NEPA. A no-action alternative is developed for two reasons. First, the no-action alternative represents a viable and feasible choice in the range of management alternatives. Second, because a no-action alternative represents the continuation of current management actions, it provides a benchmark of existing impacts continued into the future against which to compare the impacts of the other proposed management alternatives. In this EA, the impacts of the no-action alternative can be considered as the continuation of current management of the park, without the addition of the proposed trail system.

Under the no-action alternative, the proposed trail system would not be constructed at the park and the majority of the project area would remain undisturbed and largely inaccessible to visitors. Existing recreational opportunities at the park, including hiking, swimming, fishing, horseback riding, boating, hunting, ORV use, picnicking, and camping, would continue. Portions of the project area that currently contain unofficial social trails would continue to be affected. These impacts would not be mitigated and could potentially expand. While the no-action alternative fails to meet the project purpose and need, it is carried forward for evaluation as a baseline for comparison of the action alternative.

Alternative B: Construct the North Side Trail System (NPS Preferred Alternative)

The proposed trail system would cover the area from Lower Plum to Hackberry Butte. The trail head would be located at the Lower Plum Creek campground to take advantage of existing park infrastructure (all-weather access road, parking, outback restroom, and picnic tables). A combination of new trail construction, upgraded existing social trails, and connected dirt roads would result in approximately 23 miles of multiuse trails.

The 2 to 4-foot-wide trail would be primitive with no paved surfaces. It would be designed to blend into the natural surroundings, using native materials, and would offer visitors an improved recreational experience. In designing the proposed trail route, existing social trails would be considered for use to the extent feasible to minimize unnecessary impacts on natural and cultural resources. Some areas of the new trail, primarily areas with steep slopes that are prone to erosion, would require construction of rock walls, drains, and water bars. Local, natural materials would be used to gain elevation and prevent erosion on the new trail.

Under this alternative, the park would construct a sustainable, multiuse trail in four phases, all of which are analyzed in this EA. Each phase of the trail would be constructed as funding becomes available. The trail would be located entirely within the boundaries of the park (figure 2, above). Additional access points may be sought in the future, which would require additional NEPA compliance. The bike component to the multiuse trail would be considered a new use within this area of the park and would require a written determination from the superintendent, as described for 36 CFR 7.57 *Special Regulations – Lake Meredith National Recreation Area*.

The proposed trail system would provide visitors with additional recreational and educational opportunities. Phase 1 would be located in the Plum Creek area; phase 2 would cover Devils Canyon to Big Canyon; phase 3 would connect Big Canyon to Aztec Canyon; and phase 4 would begin at Aztec Canyon and would connect to the Mullinaw Trail and South Side Trail Systems. The estimated total linear distance of all phases of the multiuse trail would be approximately 23 miles. The following describes the components of the proposed trail system.

Trail Corridor. The corridor was identified and aligned by studying topographic maps, aerial photos, and through extensive fieldwork in 2015 and 2016. This background work resulted in the proposed trail corridor for all phases of the project. The actual location of the proposed trail system would be within an approximately 100-foot wide corridor. Any additional land disturbance or action outside of this corridor would require additional NEPA compliance. Each phase of the proposed trail system is described below.

- **Phase 1**—Phase 1 would be located in the Plum Creek area.
  - The trail head would be located at the Lower Plum Creek campground, locally referred to as the Meadows. The Lower Plum Creek campground is an existing developed campground in the park that contains park roads, designated picnic and camping areas, picnic tables, an outback restroom, shade structures, and fire rings. No potable water source is available; however, the area includes a self-filling horse watering station. The existing gravel parking lot at the campground contains approximately 20 spaces and would not be expanded under alternative B. Trail construction in phase 1 (figure 3) would include a combination of new trail construction, upgraded existing social trails, and connected dirt roads.
  - The main trail head for phase 1 would be in the Lower Plum Creek campground. A secondary trail head would be located in the Plum Creek boat ramp parking area. The boat ramp parking lot is paved and can accommodate 100 vehicles. The proposed new trail and upgraded social trail in phase 1 would be approximately 4.0 miles long, excluding mileage from connecting dirt roads.
- **Phase 2**—Phase 2 would cover the area from Devils Canyon to Big Canyon.
  - Phase two of the proposed trail system would begin in the Devils Canyon area and would proceed southwest along the Canadian River bottom, avoiding wetlands and water features where present and hugging the base of the canyon wall. Unlike phase 1, the proposed trail corridor for phase 2 would only involve trails below the rim and half way up the side slope of the canyon wall. This phase of the trail would continue in this manner until reaching the Big Canyon area as indicated on figure 4. The majority of this phase would be in areas of gentle or flat topography, with some steep slopes near the connection with phase 3. Phase 2 would include a combination of new trail construction, converted administrative dirt roads, and a small segment of modified existing social trails. The total length of proposed trail in phase 2 would be approximately 3.3 miles, excluding mileage from connecting dirt roads.

- **Phase 3**—Phase 3 would connect Big Canyon to Aztec Canyon.
  - Phase 3 (figure 5) of the proposed trail system would start in the Big Canyon area and continue west along the edge of the canyon toward the western park boundary in Big Canyon, then head southeast into Aztec Canyon. This section would be mid slope on the canyon wall and would continue to the southwest park boundary in Aztec Canyon. Phase 3 would include a combination of new trail construction and converted administrative dirt roads. The total length of proposed trail in phase 3 would be approximately 2.8 miles, excluding mileage from connecting dirt roads.
- **Phase 4**—Phase 4 would begin at Aztec Canyon and would connect to the Mullinaw Trail System.
  - Phase 4 (figure 6) of the proposed trail system would start in the Aztec Canyon area would continue southeast out of Aztec Canyon then turn southwest towards the Mullinaw Trail System. This phase would be mid slope on the canyon wall and would continue to the southwest park boundary in Aztec Canyon. This phase would predominantly consist of new trail construction. A break-away swing bridge would be constructed in phase 4 to protect the banks of the Canadian River. This bridge would connect the proposed trail system to the existing Mullinaw Trail System. The total length of proposed trail in phase 4 would be approximately 3.0 miles, excluding mileage from connecting dirt roads.

Trail Design. The trail would be designed to blend into the natural surroundings through the use of native materials and a primitive surface. It would be primitive with no hardened surfaces and would be approximately 2 to 4 feet wide in most areas. The trail would be designed to minimize soil and vegetation impacts and offer visitors an improved interpretive experience at the park. The trail alignment in the 100-foot-wide corridor presented in this EA would consider topography, slope, drainages, and other resources to provide visitors with a safe and aesthetically pleasing trail. The trail would avoid all wetlands and water features and would involve the use of break-away bridge in phase 4. When present and possible, existing social trails and other travel corridors would be used to avoid any unnecessary disturbance to park resources. Because of the primitive nature of the trail, the single track width, and the steep topography in the project area, universal access to many areas along the proposed trail system may not be possible. All phases of the proposed trail system would need to be located using a global positioning system and would require section 106 consultation and approval prior to construction.

Trail Construction. The trail would be constructed using natural materials found at the project site and would not require imported surfacing or paving material. Construction of some areas of the trail would require the use of motorized equipment such as trail dozers and motorized wheelbarrows. In areas of extreme slope, retaining walls would be required to avoid excessive grading. Retaining walls would be constructed with natural materials such as stone or logs. In areas with steep slopes, the trail would be constructed using a “full-bench” design. A full bench is constructed by cutting the full width of the tread into the hillside and removing the excavated soil. Although this method requires more excavation, it results in a more stable and durable trail tread that requires less maintenance.

Erosion control measures would be installed where necessary. Some areas of the new trail, primarily near canyon walls and on slopes, would require channeling drainage away from eroded surfaces using berms or swales. Local natural materials, including rock, soil, and logs, would be used to gain elevation and prevent erosion on the new trail. These materials may also be used as necessary throughout the proposed trail system to control erosion and/or protect resources. In phase 4, one area of the proposed trail system would require the installation of a break-away bridge where the trail would cross the Canadian River to connect to the Mullinaw Trail System.

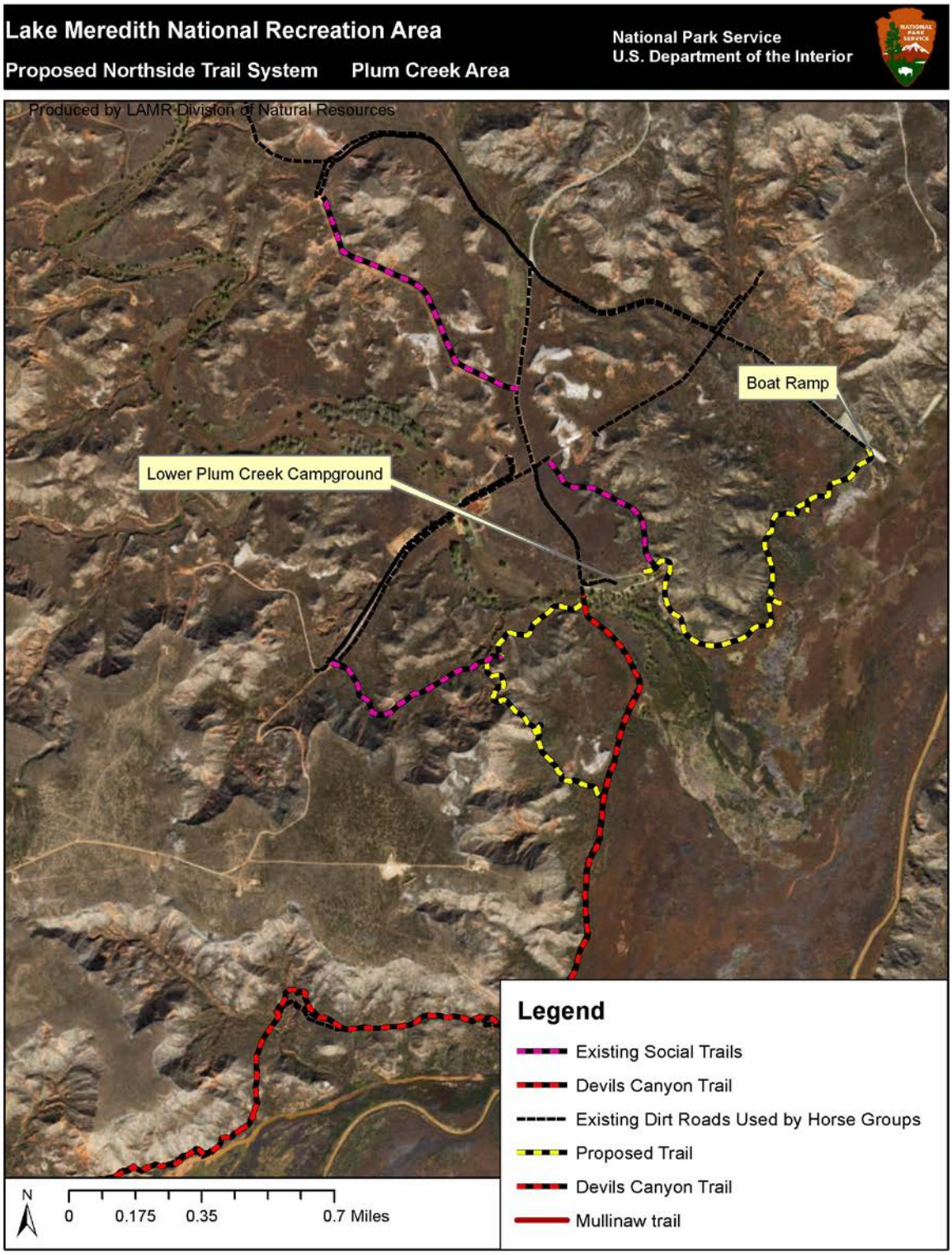

FIGURE 3: PHASE 1 – PLUM CREEK

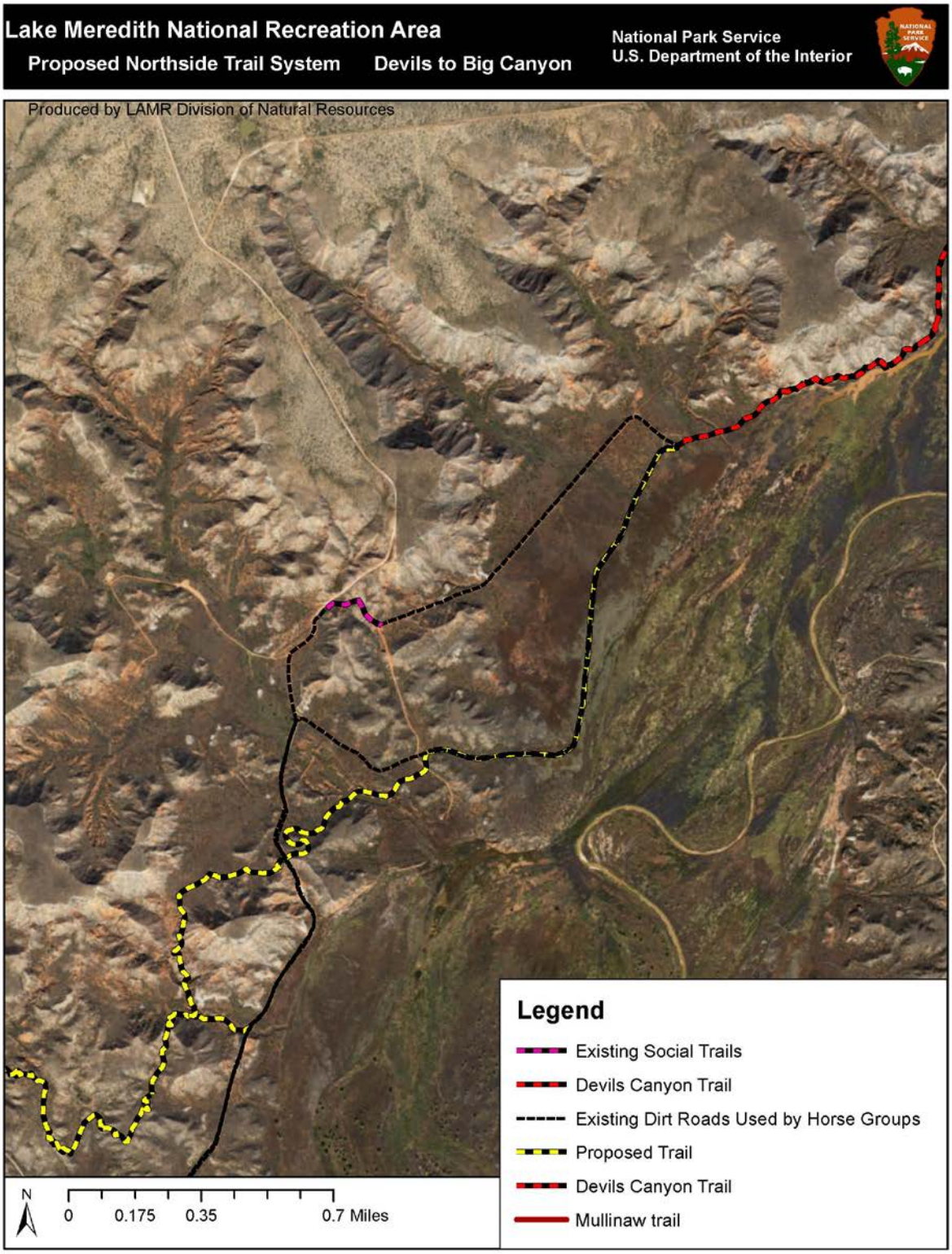

FIGURE 4: PHASE 2 – DEVILS CANYON TO BIG CANYON

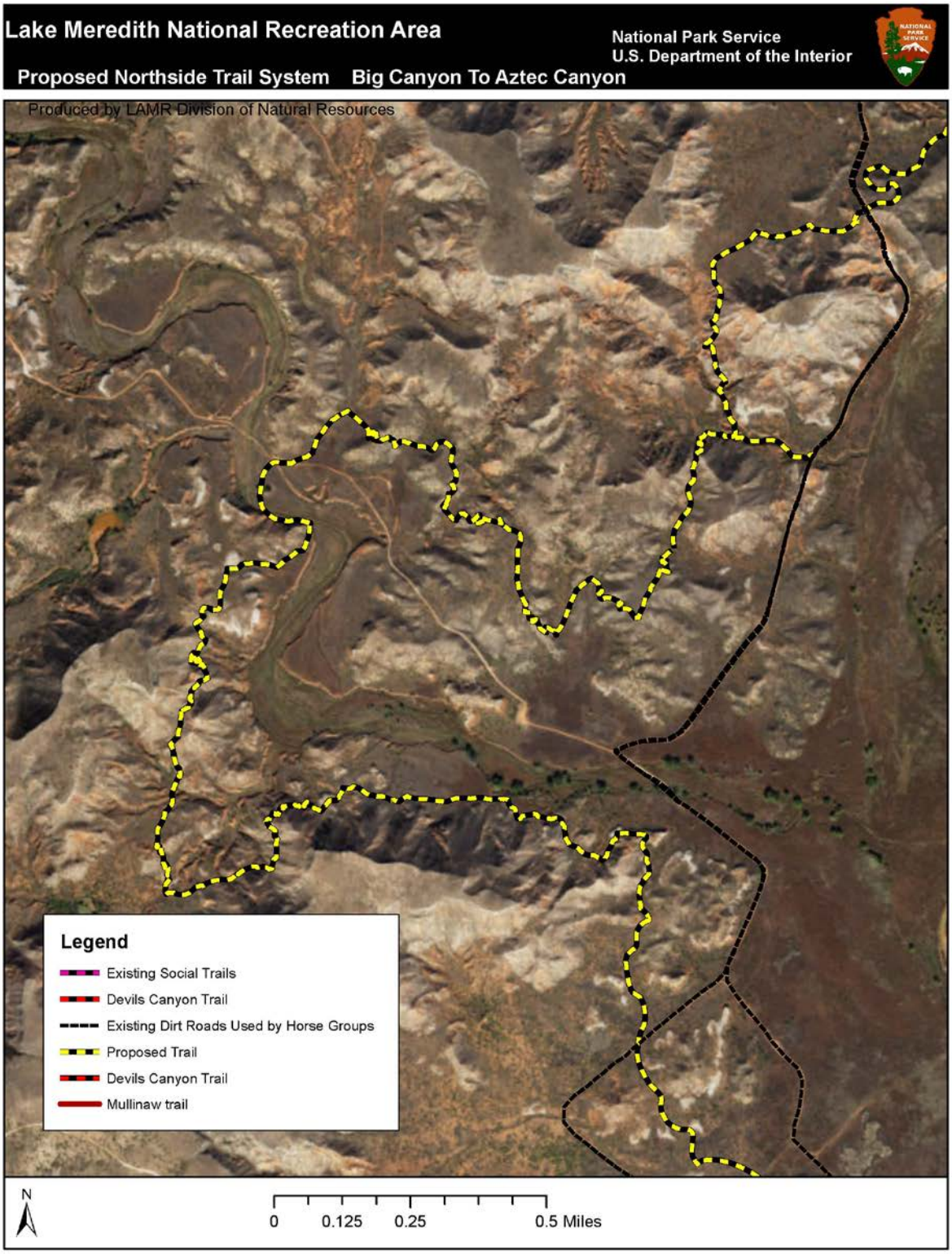

FIGURE 5: PHASE 3 – BIG CANYON TO AZTEC CANYON

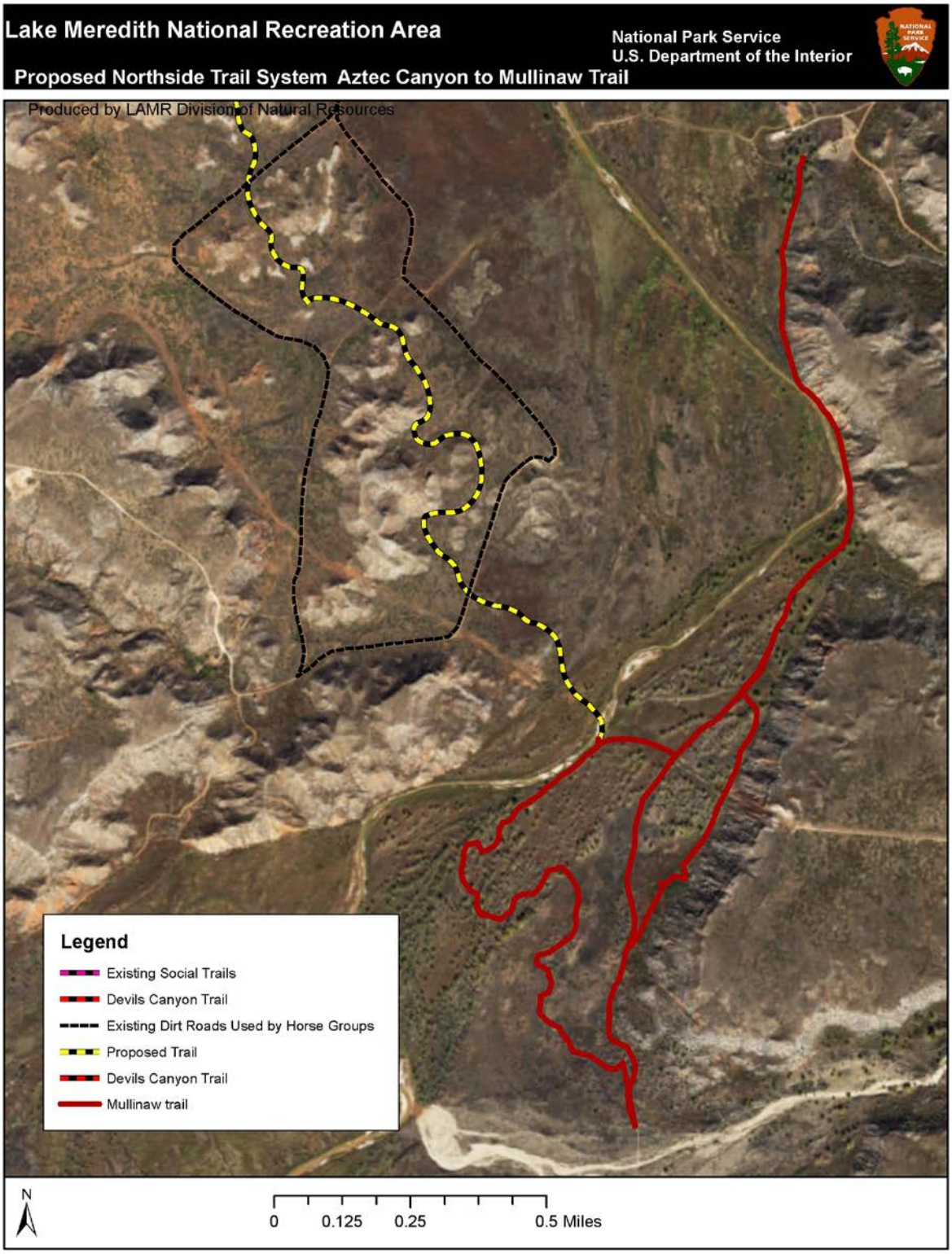

FIGURE 6: PHASE 4 – AZTEC CANYON TO MULLINAW TRAIL

Staging areas would vary as construction of the proposed trail system progressed into different areas. All staging areas would be located in previously disturbed areas. The exact location of the staging area would be determined following final trail design, and the area would be restored to its original condition following completion of construction activities. NPS would facilitate trail construction with the assistance of youth conservation crews. Final design and construction would be completed in accordance with the guidance provided in the 2007 NPS publication, *Guide to Sustainable Mountain Trails*, and other available literature on sustainable trails (NPS 2007).

Parking, Signage, and Amenities. No new or expanded parking lots would be required because the parking area at the Lower Plum Creek campground would provide adequate parking for trail users. Other existing park infrastructure, including an all-weather access road, an outback restroom, and picnic tables are also available for use at the Lower Plum Creek campground. Bike racks would be installed in the campground. There would be no potable water available in the project area along the proposed trail system, so trail users would be required to provide their own.

Kiosks would also be installed at the trailhead located at the Lower Plum Creek campground and would provide visitors with trail rules, maps, advisories, closures, and safety precautions. Primitive interpretive signage and trail markers would be placed along the trail where appropriate to provide information on cultural and natural resources and to ensure the visitors remain on trails and do not get lost and/or damage park resources. Other signs along the trail may designate skill levels and/or points of interest.

Primitive camping opportunities would be available. No trash or sanitary facilities would be provided at the primitive camping area. Campers would be required to use the “pack-it-in, pack-it-out” standards for trash disposal. Human waste would need to be buried at least 6 inches below the ground surface and at a minimum of 100 feet from campsites, trails, and water sources. However, if trash or waste disposal were to become an aesthetic or public health issue, stricter waste disposal standards would be implemented through regulations in the superintendent’s compendium.

Mobile phone service is consistently available in all phases of the proposed trail system. However, while mobile phone service is available at higher elevations, it may become intermittent in the canyons.

Management and Maintenance. The proposed trail system would be managed to allow for only non-motorized uses, including hiking, biking, and horse use. Motorized vehicles would not be allowed on the trail and pets would be permitted only if they are on a leash. Park staff would maintain the trail. Volunteer assistance would be used for ongoing trail maintenance whenever available. Maintenance activities would include erosion control, general trail repair, sign/kiosk repair and replacement, weed removal, and trash removal. Park staff would also take measures to protect any cultural or natural resources from damage caused by visitors or pets traveling off of the designated trail surface. Signs or physical barriers could be installed to prevent creation of unauthorized trails in the park. All phases of the proposed trail system would be located in areas also open to hunting with the exception of areas within a 200-yard buffer surrounding developed areas, such as campgrounds and boat ramps.

MITIGATION MEASURES

The following mitigation measures have been developed to minimize the degree and/or severity of adverse effects and would be implemented during all activities associated with the proposed action, as needed:

- Construction activities would be scheduled to minimize construction-related impacts on visitors. Areas not under construction would remain accessible to visitors as much as is safely possible.
- Per NPS standards, NPS trail crews would coordinate and supervise any trail construction or maintenance. Specifically, NPS would monitor and/or direct water bar placement, drainage placement, brushing and clearing, revegetation, where to obtain fill and other materials for trails, and how to apply fill materials such as soil, gravel, and rocks. Park staff would be responsible for

ensuring that crews perform the necessary work in accordance with NPS instructions and standards.

- To minimize the amount of ground disturbance, staging areas would be located in previously disturbed areas, away from visitor use areas to the extent possible. All staging areas would be returned to pre-construction conditions following construction.
- Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species in the trail corridor. No foreign materials with the potential to introduce invasive plant species would be brought into the area.
- A construction zone for installation of the proposed trail system, as well as staging areas and work zones would be identified and demarcated with construction tape or some similar material prior to any construction activities. The tape would define the zone and confine the activity to the minimum area needed for implementing the project.
- All crew members and volunteers assisting in the trail work efforts would be educated about the importance of avoiding impacts on sensitive resources that have been flagged for avoidance, which may include natural and cultural resources.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of discovery, and the park would consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to 36 CFR 800.13. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- According to NPS *Management Policies 2006*, NPS would strive to construct the proposed trail system with a sustainable design to minimize potential environmental impacts. Development would not compete with or dominate park features or interfere with natural processes, such as the seasonal migration of wildlife or hydrologic activity. To the extent possible, the design and management of the proposed trail system would emphasize environmentally sensitive construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings.

ALTERNATIVES CONSIDERED BUT DISMISSED

The following alternatives or alternative elements were considered for project implementation but were ultimately dismissed from further analysis in this EA. Reasons for their dismissal are provided in the following descriptions.

Alternate Trail Alignments on the North Side of the Park

During identification and alignment of the proposed trail system corridor, park staff considered alternate alignments on the north side of the park. Initially, to minimize unnecessary impacts on park resources, NPS determined that the trail should take advantage of existing administrative dirt roads and social trails where possible. Once existing social trails were explored, NPS determined that many issues made portions of these existing social trails unsuitable. In the Upper Plum Creek area, the trail meanders in and out of the park boundary and has unrepairable erosion issues. The trail from the Plum Creek windmill site going down to Plum Creek is located in the creek bed and would not be sustainable. The sides are also very steep and high in this area (i.e., 3 to 5 feet), making egress a safety concern. Additionally, both of these existing social trail segments have natural and cultural resource protection issues and NPS mandates that these resources be protected. It was ultimately determined that constructing a new trail was a better alternative for establishing the most sustainable trail system feasible, and these alternate trail alignments on the north side of the park were dismissed.

Create a Hiking-Only Trail

During the alternatives development process, it was suggested that the proposed trail system be for pedestrian-use only. Additionally, a comment received during external scoping suggested that separate trails be established for hiking use to avoid potential conflicts with other user types. This alternative element was dismissed because it was determined that, if a trail is to be constructed, it should fulfill the need for more varied recreational uses and be managed to attract new user groups, especially if water-based recreational opportunities continue to decline as the water level of the lake drops. Therefore, the creation of a hiking-only trial was dismissed as an alternative.

Allow Motorized Use of the Trail

During alternatives development, it was suggested that motorized equipment (off-road vehicles [ORVs] and dirt bikes) be allowed to use the proposed trail system. The park already contains legally designated ORV use areas in Blue Creek and Rosita (also known as Rosita Flats), and the use of vehicles off of park roads is not permitted outside of these areas. Therefore, motorized equipment use on the proposed trail system was dismissed as an alternative element.

Provide a Surfaced Trail

During the planning process for the South Side Trail System in 2010, many different trail surface types were discussed. The planning team considered trail surfaces including pavement, crushed gravel, and a natural surface. Once the actual trail location was determined, the logistical constraints and costs of surfacing became apparent. In addition to the logistical and cost factors, establishing a wider, hard-surfaced trail would involve greater impacts on soils and water quality than a natural, single-track trail would. Because these factors would also apply to development of the proposed trail system on the north side of the park, formally surfacing the trail was dismissed as an alternative element.

Provide Additional Amenities

The planning team discussed the potential for including more amenities at the project area (i.e., additional parking lots, formalized camping facilities, and toilets). Because there is currently sufficient parking at the Lower Plum Creek campground, additional parking spaces are not needed. Steep topography and access constraints (the absence of paved roads) place severe limits on establishing new parking lots in other areas along the proposed trail system. Designated camping areas and vaults toilets are located at the Lower Plum Creek campground. Topographic constraints would inhibit the construction of formalized campgrounds; however, primitive camping may be available in some areas along the proposed trail system. The construction of an outback restroom was considered for the upper reach of Big Canyon as part of alternative B; however, topographic and access constraints would preclude the installation of new toilet facilities along the proposed trail system. Therefore, the addition of new toilets, campgrounds, and parking lots was considered but dismissed.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES / IMPACT COMPARISON MATRIX

Table 2 summarizes the anticipated environmental impacts of alternatives A and B. The information contained in this table is based on the environmental analysis presented in detail in the “Environmental Consequences” section. Only those impact topics that have been carried forward as identified in the “Purpose of and Need for the Proposed Action” section are included in this table.

TABLE 2: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topics	Alternative A: No Action	Alternative B: Construct Proposed Trail System
Vegetation	Implementation of alternative A could result in the disturbance and permanent loss of vegetation in areas where unofficial social trails may expand over time. Therefore, impacts on native plant communities in the area of analysis would be adverse and permanent under alternative A. Cumulative impacts would also be adverse and permanent.	Adverse impacts on vegetation under alternative B could include changes to the abundance and quality of native plant communities and introduction of invasive species in localized areas in the proposed trail corridor. Beneficial impacts on vegetation could result in increased ability for park staff to manage invasive species and in decreased off-trail destruction of vegetation by visitors. Overall, impacts on vegetation associated with construction, maintenance, and use of the proposed trail system would be adverse and permanent but minimal and localized in nature, particularly in light of proposed mitigation measures. Cumulative impacts would also be adverse and permanent.
Soils and Erosion	Implementation of alternative A could result in impacts on soils and associated erosion and sedimentation in areas where unofficial social trails may expand over time. Therefore, impacts on soils in the area of analysis would be adverse and permanent under alternative A. Cumulative impacts would also be adverse and permanent.	Construction of the proposed trail system under alternative B would involve land-disturbing activities that would result in short-term, small, and adverse impacts on soils because of localized ground disturbance necessary for completion of the project. Following construction, the existence and continued use of the proposed trail system would result in long-term, small, and adverse impacts on soils. Cumulative impacts on soils would also be long-term, small, and adverse. Impacts on water quality resulting from sedimentation would not be substantial.
Visitor Use and Experience/ Recreational Opportunity	Implementation of alternative A would not address the issue of increasing demand for new land-based recreational opportunities. Therefore, impacts on visitor use and experience and recreational opportunities in the area of analysis would be adverse and permanent under alternative A. The contribution of alternative A to cumulative impacts would also be adverse and permanent.	Because new land-based recreational opportunities in the project area would be provided through the development of a sustainable, multiuse trail system on the north side of the park, implementation of alternative B would result in long-term, substantial, and beneficial impacts on visitor use and experience and recreational opportunities. Cumulative impacts would also be long-term and beneficial.

THE NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

The NPS preferred alternative is the alternative that would "best accomplish the purpose and need of the proposed action while fulfilling statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors" (NPS 2015a). Identification of the preferred alternative is within the sole discretion of the NPS decision maker. This authority is generally delegated to the regional director. The superintendent may make recommendations to the regional director regarding the identification of a preferred alternative. This recommendation should be based on input from the planning team and on preliminary analysis of potential impacts (NPS 2015a).

In accordance with the above requirements, the NPS preferred alternative for this EA is alternative B. Alternative B would meet the objectives of this EA by protecting cultural and natural resources and providing additional recreations opportunities to park visitors. Alternative A, the no-action alternative, would not meet the objectives outlined for this EA.

AFFECTED ENVIRONMENT

This section is intended to present information about the existing environment at the park as necessary to understand potential impacts, both positive and negative, related to the construction and maintenance of the proposed trail system.

VEGETATION

The vegetation of the park is relatively sparse because of soil and climatic conditions and consists primarily of grasses and drought-tolerant shrubs. Stands of hackberry (C*eltis* spp.) and cottonwood trees (*Populus fremontii*) grow along the side canyons, and other trees are found where they have been planted around developed sites. Although sparse, vegetation is important to the overall health of the park and provides habitat for wildlife. It also holds and traps blowing sediment, thereby preventing erosion, and is a primary factor in the park's visual quality and biodiversity (NPS 1996; NPS 2015f).

The corridor for the proposed trail system includes the following vegetation classes: vegetated cliffs, emergent scrub-shrub, unconsolidated shore, mesquite grassland, mixed forest, mixed grassland, and yucca grassland. Vegetated cliffs are sloped edges along ravines that are sparsely vegetated with bluestem (*Andropogon gerardii*), mesquite (*Prosopis* spp.), and grama grasses (gen. *Bouteloua*); netleaf hackberry (*Celtis reticulata* Torr.); and soapberry (*Sapindus saponaria)* among other vegetation types. Areas classified as emergent scrub-shrub are low-lying areas that may be inundated by lake level fluctuations and are vegetated with reeds, switchgrass (*Panicum virgatum L.*), cottonwoods (*Populus deltoides* Bartr. ex Marsh), willows (*Salix* spp.), salt cedar (*Tamarix spp.)*, and seep willow (*Baccharis salicifolia*). Unconsolidated shore areas are located along the shoreline of the lake and consist of fine sands with little to no vegetation. When vegetation is present along the unconsolidated shore, it is sparse with species such as salt grass (*Distichlis spicata (L.)* Greene), salt cedar, or herbaceous plants. Mesquite grasslands are densely vegetated with mesquite, soapweed Yucca (*Yucca glauca* Nutt. var. *glauca*), blue stem grasses, grama grasses, purple threeawn (*Aristida purpurea* Nutt.), and others. Mixed forest areas primarily contain common hackberry (*Celtis occidentalis* L.), one-seed juniper (*Juniperus monosperma* [Engelm]) Sarg.), cottonwood, soapberry (*Sapindus saponaria*), mesquite, and salt cedar. Areas of the proposed trail system located along the canyon floor contain mixed forest, mixed grassland, and Yucca grassland. Species found in the mixed grassland and Yucca grassland are very similar to those found in the mesquite grassland area (NPS 2010).

The risk of nonnative plant species invading the site of any surface disturbance is always present. Activities that disturb plant communities, such as through removal of native vegetation, may affect their succession and composition. If the native plant community is severely damaged, nonnative plants may move in and establish a permanent change in vegetation detrimental to either the establishment of a natural plant community or the reestablishment of native species (NPS 2010). Nonnative vegetation is therefore considered a potential threat to the native vegetation communities of the park (NPS 2015e).

Thirty-seven nonnative species have been documented in the park, ten of which have been classified as "highly invasive" and are displacing native species, eight of which are classified as "invasive and potentially problematic." Examples of highly invasive species found at the park include salt cedar, Russian thistle (*Salsola tragus*), and Mexican fireweed (*Bassia scoparia*) (NPS 2015e). According to NPS estimates, approximately 12,000 acres within the park are infested with nonnative species, the most prevalent being the salt cedar (NPS 2015e; NPS, Wimer pers. comm., 2016b). Invasive or noxious weeds present a potential threat to the ecosystems of national park units throughout the country, and control or eradication of these species is often extremely difficult and expensive. The park currently manages salt cedar by cutting and burning, followed by treatment with approved herbicides (NPS 2015e).

SOILS AND EROSION

More than 67% of the land base of the park comprises slopes greater than or equal to 12%. Problems associated with soils in the Lake Meredith area are generally related to soil texture (grain size) and slope. Unprotected areas are subject to blowing soil and water erosion. In the park, soil compaction, erosion, and slumping occurs along roads, where vegetation cover is sparse and slopes are steep; these areas are especially prone to erosion from surface runoff during storms. Accelerated erosion is more prevalent on steeper slopes and other disturbed areas, particularly where vegetation has been removed and cut-and-fill activities have occurred. These areas would be more highly susceptible to soil surface disturbance, such as trampling by animals and people. Such activities could potentially increase erosion of soils near trails and contribute to sedimentation of streams and other water bodies, thereby decreasing water quality (NPS 2015e).

Within the project area, soils are generally sandy and stony and often contain steep slopes. Construction and maintenance of trails can be difficult on steep slopes and, without adequate erosion control measures, can result in soil erosion and increased sedimentation in Lake Meredith and other water resources (NPS 2015e).

VISITOR USE AND EXERIENCE/RECREATIONAL OPPORTUNITIES

Visitation at the park has decreased substantially since 2000. In 2000, the park recorded 1,615,751 recreational visits. In 2015, the park recorded 831,374 recreational visits, which is an increase from 502,457, 554,272, and 692,195 in 2012, 2013, and 2014 respectively. Generally, visitation at the park is highest in June, July, and August (NPS 2015d; NPS 2016d).

Visitors have many options to take advantage of while at the park, although some options are dependent on lake levels. Water-based recreation activities include fishing, boating, waterskiing, sailing, scuba diving, and swimming. Other activities include hunting, camping, horseback riding, hiking, ORV use, picnicking, and bicycling (NPS 2010). In 2015, there were a total of 30,090 overnight stays for camping compared to 88,809 overnight stays in 2000 (NPS 2015d; NPS 2016d). According to the 2004 Visitor Study Report, the average time spent by day visitors was 3.31 hours and the average group size was three or more people. Of the approximately 481 on-site visitors surveyed during the study, nearly a quarter of respondents engaged in overnight use at the park. Visitors indicated that they engaged in a variety of activities at Lake Meredith, the most common being picnicking, swimming, boating, and fishing. Only 14% of visitors engaged in trail hiking and 2.4% went mountain biking, perhaps because no official trails existed and mountain biking was not yet allowed in the park when the 2004 Visitor Use Report was published (ASU 2004).

Three information stations, 7 developed trails or paths, 16 day and overnight use areas, 2 ORV use areas, and 53 miles of park-maintained dirt and paved roadways provide recreational opportunities for visitors to the park. Visitor-use patterns are generally marked by weekend use. In the spring, visitors enjoy fishing, boating, horseback riding, bird watching, and ORV use. In the summer, lake use increases dramatically by boaters and campers. In the fall, visitation drops slightly, and fishing and hunting become the primary recreational uses. Winter use of the park is generally light, consisting of mainly regional visitors. During hunting season, visitor uses such as hiking, mountain biking, and horseback riding could be limited due to safety issues and concerns. Although some areas at the park are remote, no primitive areas exist, and therefore no backcountry exists (NPS 2010).

Decline in Water-based Activities

As noted in the “Background” section, water levels in Lake Meredith are an item of concern for park staff, park visitors, and local communities. Water levels have reached a record low each of the last 10 years until 2015. Dropping water levels in Lake Meredith have resulted in a substantial loss of public access to the lake and a corresponding reduction in water-based recreational opportunities. Lower water

levels and reduced access could be a contributing factor to the decline in park visitation. Although water levels have risen in the past year as a result of high levels of spring and summer rainfall in the region and park staff have noted an associated increase in park visitation, lake levels are not expected to increase substantially in the near future (NPS 2010; NPS 2015d; NPS 2016d; TWDB 2015).

Hiking, Biking, and Equestrian Use

When the South Turkey Creek Trail is completed sometime in 2016, seven existing trails and paths will serve the park. The Spring Canyon Paved Trail is 3,550 linear feet and Spring Canyon North Trail is 243 feet long. Both of these trails are located in the northern section of the park. Spring Canyon experiences heavy day use on weekends throughout the spring and summer seasons. At Plum Creek, the Devil's Canyon Trail is 8,342 feet long and is used by horseback riders, mountain bikers, and hikers. The Mullinaw-McBride Trail is approximately 5 miles long and is primarily used by horseback riders and hikers. The Alibates Flint Quarries Trail is a short hike at approximately 3,960 feet. Visitors are only allowed to hike this trail while accompanied by a park ranger to discourage flint collecting, which is prohibited. Two park-led hikes down to the site are scheduled daily, weather permitting (NPS 2010). The Harbor Bay Trail system consists of approximately 5.3 miles of moderate to hard hiking trails near Fritch Canyon on the east side of the park (NPS 2016e). When completed, the South Turkey Creek Trail will consist of 12 miles of non-motorized, multiuse trails for hiking and mountain biking (NPS, Wimer, pers. comm., 2016b).

Currently, visitors are allowed to access the project area, but no formal trail has been constructed in the area and no signs or other interpretative media are available for visitors. The most popular location for general day use in the project area is Plum Creek. Visitor uses near this area include fishing, hiking, picnicking, camping, horseback riding, hunting, and general day uses. Bicycle use is permitted on all park roads, parking areas, and on designated routes from Plum Creek to Devil's Canyon and Mullinaw Trail to Chicken Creek (NPS 2010).

Camping

Eleven campgrounds are available to visitors year-round at no charge. No recreational vehicle hook-ups are available, but picnic tables are located at select campground sites and running water is available at the restrooms. Each site has access to chemical, vault, or flush toilets (NPS 2010). As previously described, a designated camping area at Plum Creek is available in the project area.

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ENVIRONMENTAL CONSEQUENCES/IMPACT ANALYSIS

INTRODUCTION

This section analyzes how the existing condition of park resources would change, either positively or negatively, as a result of implementing alternative A or alternative B. This analysis is intended to predict impacts that can reasonably be expected to occur based on scientific studies, knowledge of resources, and input from subject matter experts. Impact analysis focuses on issues identified during the scoping process that were carried forward for detailed analysis. Topics analyzed in this section include vegetation (including nonnative and exotic species), soils and erosion, and visitor use and experience and recreational opportunities. Descriptions of the affected environment for the resource topics included in this section are located in the "Affected Environment" section. This section also includes a summary of methods and assumptions used to analyze impacts and a description of the cumulative impact scenario.

METHODOLOGY AND ASSUMPITONS FOR ASSESSING IMPACTS

The analysis of impacts is a factual description of what is likely to happen to a resource if actions described under each alternative are implemented.

Development of the South Side Trail System provided park staff with experience in the construction of sustainable, multiuse trail systems. This experience and park staff's in-depth knowledge of the proposed project area provided general assumptions for the analysis of potential impacts associated with the development of the proposed trail system on the north side of the park. These assumptions are described below to provide context for the analysis of impacts associated with this EA.

Assessing Impacts Using Council on Environmental Quality Criteria

The impacts of the alternatives are discussed and interpreted describe the importance of the impact on park resources. This discussion is guided by consideration of resource context and impact intensity in accordance with the Council on Environmental Quality's definition of "significance" (40 CFR 1508.27). This discussion provides a logical connection between the impacts that are described and the conclusions that are presented (NPS 2015a).

Resource Context. The significance of implementing an alternative is analyzed in several contexts (i.e., society as a whole (human, national), the affected region, the affected interests, and the locality). Significance varies with the setting of the proposed action.

Impact Intensity. The significance of implementing an alternative is analyzed to describe the severity or magnitude of an impact. Mitigation measures may be used to reduce the occurrence and intensity of impacts described in the analysis.

Assumptions for Assessing Impacts

The following guiding assumptions were used to provide context for this analysis of impacts

Analysis Period. This EA would establish a sustainable, multiuse trail system that would meet the goals and objectives in accordance with the park's General Management Plan (NPS 2015f). Following construction, park staff would manage and maintain the proposed trail system indefinitely into the future.

Analysis Area. The geographic area for analysis in this EA is the proposed trail corridor as described in the description of alternatives. The analysis area may be adjusted to reflect each impact topic as deemed necessary. These adjustments are explained, if applicable, for each impact topic.

Duration and Type of Impacts. All descriptions of impacts on park resources are presented to be as detailed and quantitative as possible to express the importance of the impact. For the purpose of the analysis provided in this EA, the following assumptions are used for all impact topics:

- ***Impact Duration:*** The impact duration description provides an understanding of the importance of the impact over time. The following terminology is used to describe the duration of impacts:
  - *Short-term* and *temporary* impacts generally last only during construction, and the resources resume their preconstruction conditions following construction.
  - *Long-term* and *permanent* impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- ***Impact Type:*** The impact type describes what would happen on the ground as a result of the implementation of an alternative. The description should explain how a particular resource would look or function after an alternative is implemented. Both direct and indirect impacts are presented in the following sections, though they may not be differentiated in the text. The following terminology is used to describe the types of impacts:
  - *Beneficial impacts* are positive changes in the condition or appearance of the resource or changes that move the resource toward a desired condition.
  - *Adverse impacts* are negative changes that move the resource away from a desired condition or detract from its appearance or condition.

General Assumptions. The following assumptions apply for each impact topic analyzed in this section. Additional assumptions that apply for individual impact topics are presented in impact topic sections below as applicable.

- The development of a formal trail system would ensure that most recreational users would stay on designated trails and would adhere to all identified regulations. However, some occasional violations would be expected.
- Land-based recreation at the park would increase in coming years because of increased demand for recreational opportunities on public lands in Texas and projections indicating that Lake Meredith water levels and associated water-based recreational opportunities will remain low.

Cumulative Impact Analysis

Cumulative impacts result from the "incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such actions" (40 CFR 1508.7). The cumulative impact scenario for the proposed trail system is described in the following section.

CUMULATIVE IMPACT SCENARIO

Cumulative impacts are determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Ongoing and reasonably foreseeable future projects or plans at the park and, if applicable, the surrounding region were identified to provide the cumulative impact scenario. The geographic area of analysis for cumulative impacts varies slightly by impact topic, and includes both elements within the park's boundaries and actions outside the park.

NPS analyzed impacts from past actions dating back to 1996, when the Resources Management Plan was completed and provided goals for managing recreation at the park. Cumulative impacts of future planned projects were also analyzed.

The following projects, plans, or actions were identified for the purpose of conducting the cumulative effects analysis.

Resources Management Plan (1996). The *Resources Management Plan* provides goals for the park that address preserving park resources, providing for the public enjoyment and visitor experience, perpetuating cultural resources, enhancing recreational opportunities managed by partners, and ensuring organizational effectiveness. The plan contains a goal that promotes conditions where "visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities" (NPS 1996). Actions arising from this plan have the potential to increase resource protection and improve visitor use and experience.

Oil and Gas Management Plan (2002). The 2002 *Oil and Gas Management Plan* for the park was prepared for the purpose of guiding the management of activities associated with the exploration and development of nonfederal oil and gas within the park. The *Oil and Gas Management Plan* identifies those park resources and values most sensitive to oil and gas exploration and development disturbance and defines impact mitigation requirements to protect such resources and values. To protect park resources and values, the plan establishes performance standards for oil and gas exploration and development, and it provides pertinent information to oil and gas owners and operators to facilitate compliance with applicable regulations (NPS 2002). As of 2002, there were 170 active non-federal oil and gas operations in the park. Construction and operation of these facilities has the potential to affect soils, vegetation, visitor use and experience, and park operations.

Fire Management Plan (2012). Wildland fire has historically played an important part of the area's ecosystem. Its effects on vegetation and wildlife have always weighed heavily on the park's natural processes. The *Fire Management Plan* for the park is a detailed program of action to implement a prescribed fire program and manage wildland fires. This plan is the primary reference for conducting all fire management activities and is intended to help achieve the resource management objectives as presented in the *Resource Management Plan*. Protection of life (employee and public), property, cultural resources; the perpetuation of natural resources and their associated processes; and protection of cultural and historic scenes are the highest priorities for the plan. This plan is based on a strategy to use prescribed burns and mechanical methods to remove excess fuel from the system, which would reduce the likelihood of major wildfires and would also provide benefits to native vegetation and wildlife in the area (NPS 2012).

General Management Plan (2015). The *General Management Plan* provides a vision for the future of the park and guides management of the park for the next 15 to 20 years. The *General Management Plan* lays the groundwork for the more detailed planning and day-to day decision making that will follow. The park's *General Management Plan* provides for public use at the park, identifies development and management actions that satisfy recreational needs, and guides all future recreation development and management at the park. The plan aims to encourage non-motorized recreation such as hiking, biking, backpacking, and paddling and to provide visitors with the opportunity to enjoy new activities by defining trails for hiking and biking on the west side of the park (NPS 2015f). Actions arising from this plan have the potential to increase resource protection and improve visitor use and experience and would be consistent with the goals of providing for non-motorized uses. Activities associated with this plan have the potential to affect resources in the project area.

ORV Management Plan/EIS (2015). There are two authorized ORV use areas at the park: Blue Creek and Rosita (also known as Rosita Flats). ORV use has occurred in these areas since at least the 1950s; however, the two areas were not designated as ORV areas until the 1970s. The use of ORVs has resulted in impacts on soils, vegetation, park management, visitor experience, and visitor safety. The *ORV Management Plan* and corresponding regulations address ORV use at both Blue Creek and Rosita. The plan is used to guide the management and control of ORVs at the park for approximately the next 15 to 20 years (NPS 2015e). This plan provides for expanded visitor use and experience opportunities in the park.

Invasive Species Removal. Salt cedar (also known as tamarisk) is an invasive plant that occurs throughout Texas and extensively infests the park. Anecdotal evidence suggests that salt cedar infestations in and around Lake Meredith have reduced the inflow of runoff water from rainfall into the lake. In 2002, the Entomology Program at the Texas A&M Research and Extension Center began a cooperative effort with the Bureau of Reclamation to develop a bio-control program for salt cedar at Lake Meredith. In 2004, as part of a research study, planned releases of *Diorhabda elongate*, a chrysomelid beetle that is an aggressive defoliator of salt cedar, were carried out at two sites at Lake Meredith. NPS conducted aerial spraying in late August 2008 on 5,298 acres. Herbicide was applied in an area starting at the southwest boundary of the park on the Canadian River at Rosita to the Sanford Dam. This included lake-bottom (pre-drought), and much of the entire shoreline. The aerial spraying was completed in September 2009. Treatment for salt cedar and other exotic plants has continued by hand-crews (NPS, Wimer, pers. comm., 2009; NPS 2010; NPS, Wimer, pers. comm., 2016b).

Ongoing Maintenance Activities. Throughout the park, regularly scheduled maintenance activities are conducted to ensure visitor health and safety. These activities involve infrastructure maintenance and upkeep, such as ensuring water quality and access. Regular repairs to roads and concrete ramps occur on an ongoing basis (NPS 2010). The potential for impacts on soils, vegetation, park operations, and visitor experience exists from maintenance activities.

Hunting. Hunting is a popular activity at the park with game species, including dove, turkey, quail, duck, goose, and white-tailed and mule deer. The use of ORVs has been a popular means of transportation for visitors engaging in hunting in the park (NPS 2010). The proposed trail system would be located in areas open to hunting.

Sand Drag. The annual Sand Drag event, held every February, attracts thousands of spectators and hundreds of motorcycles, four wheelers, sand rails, and river buggies. Drivers of these vehicles compete against one another in ORV races. Although Sand Drag is private and is held outside of the park, the park experiences a substantial increase in visitor use associated with this annual event. This dramatic increase in visitation necessitates greater law enforcement and park management services, while the increased intensity of ORV use in designated ORV use areas within the park has the potential to negatively affect soils and other natural resources (NPS 2010).

Increasing Demand for Regional Public Lands. The park is the largest area of public lands in the Texas panhandle, providing numerous opportunities for access to diverse, affordable outdoor land- and water-based recreational activities. In the state of Texas, only 3% of total land base is open to the public; this reflects a relative dearth of public recreational opportunities compared to other states. The next largest park in the Lake Meredith region is Palo Duro Canyon State Park, which is located approximately 70 miles south of Lake Meredith and contains 26,275 acres of the scenic, northern-most portion of the Palo Duro Canyon. Amenities in Palo Duro Canyon State Park include an interpretive center, cabins, tent and recreational vehicle sites, hiking and mountain bike trails, horse stables, and picnic areas (NPS 2010). Increasing demand for regional public lands can affect visitor use and experience.

VEGETATION

Guiding Regulations and Policies

According to NPS *2006 Management Policies*, NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2006).

Context

The area of analysis for impacts of alternatives on vegetation includes areas on the north side of the park in the immediate vicinity of the proposed project area, including the proposed trail corridor. The area of analysis for the cumulative impacts assessment includes all park lands. Resource-specific context for assessing impacts of the alternatives on vegetation includes:

- The potential for increased recreational use in the project area may reduce the prevalence of native vegetation.
- The potential for increased recreational use in the project area may increase the prevalence of invasive plant species.

Methods and Assumptions

Potential impacts on vegetation were evaluated using available mapping data and park staff knowledge of plant communities in the proposed project area, anticipated locations for management activities, anticipated locations of continued visitor use, and associated resource impacts under each alternative.

The following assumptions were made to assess the degree and significance of potential impacts on vegetation under each alterative:

- Development of new trails results in the permanent removal of vegetation.
- Use of trails prohibits regrowth of vegetation.
- Construction activities can introduce invasive plant species.
- Recreational use in areas not historically accessed by the public can contribute to the spread of invasive plant species.
- Increased access can facilitate management of invasive plant species.

Alternative A (No-Action Alternative)

Under the no-action alternative, NPS would not construct the proposed trail system. No construction- or maintenance-associated ground disturbance would occur that would affect vegetation in the project area.

However, assuming that demand for land-based recreational opportunities will increase, if existing social trails expand under the no-action alternative, then there could be new ground disturbance associated with trampling by hikers and horseback riders in the proposed project area. This potential expansion of an unofficial social trail system would not follow sustainable trail practices and trails would not be monitored or maintained. Vegetation in these areas would be trampled and destroyed and increased levels of visitor use could spread invasive plant species throughout the north side of the park. Given this situation, impacts on native vegetation in the proposed project area would be adverse and permanent. Locally, these impacts would be significant to plant communities in the park.

Cumulative Impacts. Past, present, and reasonably foreseeable actions associated with the items described in the cumulative impact scenario have affected or could affect vegetation in the park. Development associated with oil and gas operations has contributed to the disturbance and loss of vegetation. While ORV use has resulted in substantial adverse impacts on vegetation in that area of the park, the establishment of designated ORV trails has mitigated the intensity and geographic scale of these impacts. Ongoing maintenance activities have resulted in localized impacts on vegetation throughout the park, especially in areas where soil-disturbing activities such as facilities maintenance and construction, are involved. Visitor use in the park would continue to adversely affect vegetation in areas where visitors operate vehicles, fish, picnic, and hike off of established roads and in formal use areas. Impacts on vegetation from this ongoing recreational use, particularly in light of increasing demand for recreational opportunities on regional public lands, would be permanent and adverse.

Implementation of the *Fire Management Plan*, in conjunction with invasive species removal efforts, would remove excess fuel from the park, reducing the likelihood of major wildfire events and improving the health of native plant communities in the park. The *Resources Management Plan*, *ORV Management Plan*, and the *General Management Plan* provide resource protection measures that result in long-term, beneficial impacts on vegetation in the park. Invasive plant species control efforts, if successful, could reduce the spread of noxious plant species and open up more area for the establishment of native vegetation, resulting in long-term, beneficial impacts on native vegetation in the park.

Although the potential exists for beneficial impacts from some of the present and future cumulative actions mentioned above, past and ongoing actions have resulted in adverse impacts on vegetation. Therefore, the effects of the past, present, and future actions would result in adverse, long-term impacts on vegetation. Because there would be potential impacts on vegetation under alternative A if unofficial social trails continue to expand, the implementation of this alternative would contribute to the overall effect on vegetation associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Implementation of alternative A could result in the disturbance and permanent loss of vegetation in areas where unofficial social trails may expand over time. Therefore, impacts on native plant communities in the area of analysis would be adverse and permanent under alternative A. Cumulative impacts would also be adverse and permanent.

Alternative B (NPS Preferred Alternative)

Construction of the proposed trail system under alternative B would require ground disturbance and potential vegetation damage throughout the majority of the proposed trail corridor, particularly in areas of new trail construction and in areas adjacent to the existing trails. Although the trail would be aligned to avoid native vegetation where possible, the length of the proposed trail corridor would make it nearly impossible to prevent impacts on vegetation. Therefore, some trampling and destruction of vegetation would be expected to occur in localized areas within the trail corridor during construction activities.

Mitigation measures such as trail crew training, locating staging areas in previously disturbed areas, and flagging the boundaries of the construction zone would help to minimize the amount of disturbance to native vegetation. Materials to be used to gain elevation and prevent erosion along the proposed trail system would be local, natural materials and may include rock, soil, and logs. Use of local materials would reduce the potential for the introduction of invasive species in the proposed project area. Signs and kiosks would be installed along the length of the trail but would be placed in locations that would not require vegetation removal. Construction of the proposed trail system would result in impacts on the quantity and quality of native plants, but impacts would be localized to specific areas within the proposed trail corridor where avoidance of vegetation would not be possible. Impacts on vegetation from construction activities would therefore be adverse and permanent but would be minimized through the use of identified mitigation measures.

Vegetation loss within the 2 to 4-foot-wide trail surface would be permanent because it would be removed to facilitate the establishment of a suitable trail. However, revegetation of disturbed areas outside the trail surface would replace some of the vegetation lost or damaged during trail construction. Some vegetation would continue to be lost or damaged as a result of normal trail use because trails are often widened by users who are forced to leave the designated trail to yield to oncoming trail users. However, by clearly designating an official trail system on the north side of the park, visitors would be less likely to trample vegetation in areas not identified for trail use.

Invasive plant species could be inadvertently transported into the park and spread along the proposed trail system by construction activities as well as use by hikers, bikers, and horseback riders. Impacts would depend on trail use and whether imported seeds are able to establish along the trail. Following

construction of the proposed trail system, areas that were disturbed would be monitored and invasive vegetation would be removed.

Conversely, the proposed trail system could provide opportunities for park staff to access and manage areas infested with invasive species, providing potential beneficial impacts on native plant communities. Impacts from the spread of invasive species would be adverse and permanent if viable seeds are transported and become established. However, because of the low potential for impacts on native plant communities from invasive seed dispersal by individual trails users and the mitigation measures that would be implemented during and following construction of the proposed trail system, impacts would be minimal.

Cumulative Impacts. Cumulative impacts of past, present, and reasonably foreseeable actions would be the same as those described under alternative A. Because there would be potential impacts on vegetation under alternative B, the implementation of this alternative would contribute to the overall adverse and long-term effects on vegetation associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Adverse impacts on vegetation under alternative B could include changes to the abundance and quality of native plant communities and introduction of invasive species in localized areas in the proposed trail corridor. Beneficial impacts on vegetation could result in increased ability for park staff to manage invasive species and in decreased off-trail destruction of vegetation by visitors. Overall, impacts on vegetation associated with construction, maintenance, and use of the proposed trail system would be adverse and permanent but minimal and localized in nature, particularly in light of proposed mitigation measures. Cumulative impacts would also be adverse and permanent.

SOILS AND EROSION

Guiding Regulations and Policies

According to NPS *Management Policies 2006*, NPS will preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue. In addition, NPS will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources (NPS 2006).

Context

The area of analysis for impacts of alternatives on soils includes areas on the north side of the park in the immediate vicinity of the proposed project area and in nearby water bodies that could experience increased sedimentation as a result of erosion associated with trail construction and use. The area of analysis for the cumulative impacts assessment includes all park lands. Resource-specific context for assessing impacts of the alternatives on soil includes:

- The potential for increased recreational use in the project area may increase the scale of impacts on soils, including soil compaction, decrease in soil stability, and subsequent erosion.

Methods and Assumptions

Potential impacts on soils were evaluated based on park staff knowledge and professional judgement, anticipated locations for management activities, anticipated locations of continued visitor use, and associated resource impacts under each alternative. This section also includes a discussion of sedimentation, which could potentially occur if eroded material is deposited into nearby water sources.

The following assumptions were made to assess the degree and significance of potential impacts on soils under each alterative:

- Development of new trails would result in permanent disturbance to soils.
- Trail use would compact soils in existing trail corridors.
- Impacts on soils would increase as trails expand over time.
- Clearly identifying specific trail corridors would reduce off-trail impacts on soils.
- Construction and expansion of trails could contribute to erosion and sedimentation.

Alternative A (No-Action Alternative)

Under the no-action alternative, NPS would not construct the proposed trail system. No construction- or maintenance-associated ground disturbance would occur that would impact soil in the area of analysis.

However, given that the demand for land-based recreational opportunities is expected to increase, if existing social trails expand under the no-action alternative, then new ground disturbance associated with increased use by hikers and horseback riders could occur in the proposed project area. This potential expansion of an unofficial social trail system would not follow sustainable trail practices, and trails would not be monitored or maintained. Soils in these areas would be exposed and compacted, increasing the potential for erosion and subsequent sedimentation into nearby water bodies. As a result, impacts on soils in the proposed project area would be adverse and permanent. In the park, these impacts would be significant to soils and water quality (through erosion).

Cumulative Impacts. Past, present, and reasonably foreseeable actions in the park have affected or could affect soils in the park. Development associated with oil and gas operations has contributed to the disturbance and loss of soils in the area of analysis. ORV use adjacent to the park has previously and would continue to adversely affect soils. ORV use in the park also affects soils; however, the intensity and geographic area of these impacts has been mitigated through designation of formal ORV use areas. Natural processes such as flash-flooding increases soil loss and results in increased erosion and potential sedimentation, particularly when the soils have been loosened or disturbed by previous activities. Ongoing facility maintenance and construction activities would result in impacts on soils if ground-disturbing activities were involved. Continued visitor use in the park would continue to adversely impact soils in areas where visitors operate vehicles and hike off of established trails, roads, and formal use areas. Recreational use would result in localized soil erosion, increasing the potential for transport of sediments into nearby water bodies, including Lake Meredith. Impacts on soils from ongoing recreational use and the anticipated increase in demand for recreational opportunities on regional public lands would be permanent and adverse.

As noted above in discussion of impacts on vegetation, implementation of the *Fire Management Plan*, in conjunction with invasive species removal efforts would improve the health of native plant communities in the park and contribute to soil stability. The *Resources Management Plan*, *ORV Management Plan*, and *General Management Plan* provide resource protection measures that result in long-term, beneficial impacts on soils in the park.

Although the potential exists for beneficial impacts from some of the present and future cumulative actions mentioned above, past and ongoing actions have resulted in adverse impacts on soils. Therefore, the effects of the past, present, and future actions would result in adverse, long-term impacts on soils. Potential impacts on soils would continue under alternative A if unofficial social trails continue to expand. As a result, alternative A would contribute to the overall effect on soil associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Implementation of alternative A could result in impacts on soils and associated erosion and sedimentation in areas where unofficial social trails may expand over time. Therefore, impacts on soils in the area of analysis would be adverse and permanent under alternative A. Cumulative impacts would also be adverse and permanent.

Alternative B (NPS Preferred Alternative)

Construction of the proposed trail system under alternative B would require ground disturbance associated with establishing the trail surface, including grading, leveling, and filling throughout the length of the proposed trail corridor. Construction disturbance to soils would result in readily apparent disturbance and displacement of soils throughout the area of analysis. Impacts would be both short and long term in nature because the impact of constructing trails on steep, poorly consolidated soils increases the potential for increased soil erosion. Therefore, while not large in scale, impacts on soils would be adverse and both short and long term.

Increased soil erosion could also result in an overall increase in the potential for deposition of sediments into nearby water resources via runoff during storm events. Sedimentation of water features could result in long-term, adverse impacts on water quality because of increases in turbidity. Mitigation measures such as trail crew training, proper location of staging areas, scheduling work around storm and wind events, and flagging the boundaries of the construction area would help to minimize soil disturbance, erosion, and sedimentation during the construction of the trail.

Construction in areas with steep slopes would require the installation of retaining walls and other erosion control measures, which would result in short-term impacts on soils. However, impacts from retaining walls would be minimal because although soils would be present, construction would be localized over a small area within the proposed trail corridor. Phase 4 of the proposed trail system would involve the installation of a break-away swing bridge to protect the banks of the Canadian River, which would result in some minimal short-term impacts on soils in the immediate area of the bridge footprint during installation.

Continued use of the proposed trail system would result in some localized soil erosion and displacement as a result of use by mountain biker, pedestrians, and horseback riders. Some sections of the trail would be affected more than others depending on soil composition and slope. For example, soils in areas with rocky, steep slopes would be more susceptible to erosion than areas with less severe slopes. In areas of unstable soils and steeper grades, soils could be displaced and carried to lower elevation by wind and storm events. Without regular maintenance and repair, continued erosion could releases sediment into local waters. Park staff and volunteer trail crews would conduct repair and maintenance activities as necessary throughout the life of the trail, mitigating impacts on soil and reducing erosion and potential sedimentation. Specific mitigation measures would include installation of retaining walls, water bars, and soil stabilization through planting vegetation where practicable. Mitigation measures directed at controlling erosion and sedimentation would be focused in areas of steep slopes and unconsolidated soils. Impacts on soils from use of the trail would be detectable and would occur throughout the proposed trail corridor, but would generally decline as the tread of the trail becomes more defined, established, and compacted over time. Therefore, impacts on soils from the construction, maintenance, and continued use of the proposed trail system would be minimal, localized, adverse, and long term.

Because mitigation measures would be in place to prevent erosion and subsequent sedimentation into nearby water resources where possible, impacts on water quality would not be substantial.

Cumulative Impacts. Cumulative impacts of past, present, and reasonably foreseeable actions would be the same as those described under alternative A. Because there would be potential impacts on soils under alternative B, the implementation of this alternative would contribute to the overall adverse and long-term effects on soils associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Construction of the proposed trail system under alternative B would involve land-disturbing activities that would result in short-term, small, and adverse impacts on soils as a result of localized ground disturbance necessary for completion of the project. Following construction, the maintenance and continued use of the proposed trail system would result in long-term, small, and adverse impacts on soils.

Cumulative impacts on soils would also be long-term, small, and adverse. Impacts on water quality resulting from sedimentation would not be substantial.

VISITOR USE AND EXERIENCE/ RECREATIONAL OPPORTUNITIES

Guiding Regulations and Policies

According to NPS *Management Policies 2006*, the enjoyment of park resources and values by the public is part of the fundamental purpose of all park units (NPS 2006). The park was established, in part, to provide for public use and enjoyment of the lands and waters associated with Lake Meredith. Historically, recreational activities at the park have been primarily water-based and have included fishing, boating, water skiing, and swimming. However, decreasing water levels in the lake have led to reduced access to water-based activities. In addition, limited opportunities for hiking and biking are available at the park. The proposed trail system would provide additional non water-based recreational opportunities and improve visitor enjoyment of the park.

Context

The area of analysis for impacts of alternatives on visitor use and experience and recreational opportunities includes all areas within the park boundaries. The area of analysis for the cumulative impacts assessment includes all park lands plus adjacent lands and communities in the Texas panhandle. Resource-specific context for assessing impacts of the visitor use and experience and recreational opportunities includes:

- The absence of increased recreational opportunities in the area of analysis may increase the scale of impacts on visitor use and experience and recreational opportunities over time, particularly given increasing demand.

Methods and Assumptions

The methodology used for assessing impacts on visitor use and experience and recreational opportunities is based on how construction activities associated with the development of the proposed trail system would affect visitors, including level of use, recreational experience, and public health and safety considerations. The impact on the ability of the visitor to experience a full range of park resources was analyzed by examining resources mentioned in the purpose and significance statements for the park.

The following assumptions were made to assess the degree and significance of potential impacts on visitor use and experience and recreational opportunities under each alterative:

- Development of new trails and associated infrastructure would result in expanded visitor use and experience and recreational opportunities.
- Development of new interpretive resources would expand visitor understanding and appreciation of natural and cultural resources.
- Increasing demand for recreational opportunities could result in overuse and crowding of available recreational resources.

Alternative A (No-Action Alternative)

Under the no-action alternative, NPS would not construct the proposed trail system and no new land-based recreational opportunities would be established in the project area. The lack of additional non-motorized, land-based recreational opportunities would continue within the park, resulting in long-term impacts on visitor use and experience and recreational opportunities. Given that demand for land-based recreational opportunities is expected to increase, these impacts would be amplified.

While the expansion of existing social trails could occur under the no-action alternative, providing a limited increase in land-based recreational opportunities, this expansion would primarily be by equestrian users and would not serve the increasing demand for other land-based recreational opportunities. Additionally, the park would not facilitate this development, trails would not be sustainably constructed, and NPS would not construct any additional facilities (e.g., outback restrooms) for visitor use. Given this situation, impacts on visitor use and experience and recreational opportunities would be adverse and permanent.

Cumulative Impacts. Past, present, and reasonably foreseeable actions in the park have affected or could affect visitor use and experience and recreational opportunities in the area of analysis. Development associated with oil and gas operations, as well as park management activities associated with the *Fire Management Plan*, *General Management Plan*, invasive species removal, and general park maintenance activities can result in short-term impacts on visitor use and experience and recreational opportunities if associated activities result in area closures or detract from the overall visitor experience. For example, the presence of trucks and other maintenance equipment can detract from park visitors' experience of the natural environment of the park. However, park-associated management activities intended to enhance park resources, such as trail improvements, result in long-term, beneficial impacts.

Although the potential exists for short-term, adverse impacts from some of the present and future cumulative actions mentioned above, past and ongoing actions have resulted in equal or greater beneficial impacts on visitor use and experience and recreational opportunities. Therefore, the effects of the past, present, and future actions would result in beneficial, long-term impacts on visitor use and experience and recreational opportunities. Because the potential for adverse impacts on visitor use and experience and recreational opportunities exists under alternative A if new recreational opportunities are not developed, the implementation of this alternative would contribute adverse impacts on visitor use and experience and recreational opportunities associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Implementation of alternative A would not address the issue of increasing demand for new land-based recreational opportunities. Therefore, impacts on visitor use and experience and recreational opportunities in the area of analysis would be adverse and permanent under alternative A. The contribution of alternative A to cumulative impacts would also be adverse and permanent.

Alternative B (NPS Preferred Alternative)

Construction of the proposed trail system under alternative B would provide new land-based recreational opportunities in the area of analysis through the development of a sustainable, multiuse trail system on the north side of the park. By providing new and expanded recreational opportunities, this alternative would result in long-term, beneficial impacts on visitor use and experience and recreational opportunities. The addition of 23 miles of trails would provide new opportunities for hiking, biking, horseback riding, nature viewing, and resource education. The addition of interpretive signs in the trail corridor would improve visitor understanding of the natural and cultural resources by providing narratives and resource protection messages to enhance visitor enjoyment of these resources.

Minimal short-term impacts on visitor use and experience and recreational experience may exist during construction of the proposed trail system. While these impacts would be perceptible, they would not appreciably limit the visitor experience, particularly considering that a formalized trail system does not currently exist in this area. Efforts would be made to schedule construction outside of periods of peak visitation when feasible. Because the trail would be developed using natural materials, it would blend into the landscape and would not adversely affect visitors' visual experience of the park.

Because of the lack of existing land-based recreational opportunities in the area, development of the proposed trail system could result in a measurable increase in visitation, especially during the primary visitor use season from May to September. Increases in visitation have the potential to affect the overall

visitor experience through overcrowding of trails, campgrounds, parking lots, and sanitary facilities. The Plum Creek area, which would serve as the primary access and trailhead, contains paved parking for approximately 20 vehicles. The boat ramp parking lot, which would be a secondary trailhead for the proposed trail system, is paved and can accommodate 100 vehicles. These parking areas should be adequate to serve trail users. Because the Lower Plum Creek campground has an existing outback restroom, impacts resulting from improper waste disposal would not be expected. However, if visitors do not comply with proper waste disposal requirements, there would be potential adverse impacts to the visitor experience. Public education and patrols would help to mitigate the impacts of improper waste disposal.

Cumulative Impacts. Cumulative impacts of past, present, and reasonably foreseeable actions would be the same as those described under alternative A. Because impacts on visitor use and experience and recreational opportunities could be beneficial under alternative B, the implementation of this alternative would contribute to the overall long-term and beneficial effects on visitor use and experience and recreational opportunities associated with any past, present, or reasonably foreseeable future actions in the area of analysis.

Conclusion. Because new land-based recreational opportunities in the project area would be provided through the development of a sustainable, multiuse trail system on the north side of the park, implementation of alternative B would result in long-term, substantial, and beneficial impacts on visitor use and experience and recreational opportunities. Cumulative impacts would also be long-term and beneficial.

CONSULTATION AND COORDINATION

SCOPING AND PUBLIC INVOLVEMENT

Scoping is a process to identify resources that may be affected by a proposed project and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. The park conducted internal scoping with appropriate NPS staff, as described in more detail in the "Consultation and Coordination" section, below. The park area also conducted external scoping with the public and interested/affected groups and conducted tribal consultation.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to construct a sustainable, multiuse trail on the north side of the park and to generate input on the preparation of this EA. The scoping letter, dated November 3, 2015, was mailed to the interested public, various federal and state agencies, affiliated Native American tribes, and local governments. Scoping information was also posted on the park's website.

During the 30-day scoping period, six pieces of correspondence were received containing a total of six signatures. The public submitted five correspondence letters through the NPS Planning, Environment, and Public Comment (PEPC) website and one letter was submitted directly to the park. Five commenters supported the establishment of the proposed trail system. Representatives from the Comanche Nation and the Kiowa Tribe of Oklahoma indicated that the area of the proposed trail system does not contain any historic properties that may be affected by activities associated with this EA and asked to be informed in the event of the unearthing of cultural resources or human remains. One commenter noted that trails should be marked with distances. Another commenter, while expressing support for the development of the proposed trail system, expressed concern that there may be conflicts associated with visitors on foot and visitors on horseback sharing the proposed trails. Mitigation strategies have been included in this EA to address any cultural resource issues that may arise during the construction of the proposed trail system. Also, NPS would develop standard practices for trail etiquette (such as visitors on foot yielding to visitors on horseback) to mitigate conflicts between various trail uses. More information regarding external scoping and Tribal consultation can be found in appendix C.

LIST OF RECIPIENTS AND PUBLIC REVIEW

This EA will be released for public review in August 2016. To inform the public of the availability of this EA, NPS will publish a press release and place a copy on its website. Copies of the EA will be provided to members of the park's mailing list and to interested individuals upon request. Copies of the document will also be available for review at the park's visitor center and on the NPS PEPC website at http://parkplanning.nps.gov/lamr.

The EA is subject to a 30-day public comment period ending August 29, 2016. During this time, the public is encouraged to submit their written comments to the NPS address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of the decision document. NPS will issue responses to substantive comments received during the public comment period and will make appropriate changes to the EA as needed.

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LIST OF PREPARERS AND CONTRIBUTERS

National Park Service, Lake Meredith National Recreation Area, Fritch, Texas

Robert J. Maguire, Superintendent

Arlene Wimer, Chief of Resources Management

John Lysaught, Biologist, GIS Specialist, and Contracting Office Representative

Louis Berger

Katie Chipman, Project Manager and Environmental Planner, Denver, Colorado

Lori Fox, QA/QC, Denver, Colorado

Deborah Mandell, Senior Technical Editor, Needham, Massachusetts

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ACRONYMS

CFR	Code of Federal Regulations
EA	environmental assessment
ESA	Endangered Species Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
ORV	off-road vehicle
Park	Lake Meredith National Recreation Area
PEPC	Planning, Environment, and Public Comment
TPWD	Texas Parks and Wildlife Department
USFWS	US Fish and Wildlife Service

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REFERENCES

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Cordell, H. K.

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2016a "Hiking at Lake Meredith National Recreation Area, Texas." National Park Service. Accessed April 12, 2016. https://www.nps.gov/lamr/planyourvisit/hiking.htm.

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Texas Parks and Wildlife Department (TPWD)

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APPENDIX A—SECTION 7 MEMO TO FILE

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Memorandum

To: File

From: Arlene Wimer, Chief of Resource Management, Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument

Date: 7/20/2016

Re: Endangered Species Act, Section 7 No Effect Determination for the Lake Meredith Recreation Area's Environmental Assessment for the Construction of the North Side Trail System

---

Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), 16 United States Code (USC) § 1531 *et seq.*, the National Park Service (NPS) is required to ensure that its actions do not jeopardize the continued existence of ESA-listed species or result in the destruction or adverse modification of designated critical habitat (16 USC 1536(a)(2)).

To comply with Section 7 of the act, a species list for Moore and Potter Counties in Texas was downloaded on April 14, 2016, from the United States Fish and Wildlife Service's (USFWS) IPaC website. This species list is attached. Based on this species list, this No Effect determination covers the following list of endangered, threatened, or proposed species and associated designated (or proposed for designation) critical habitat: least tern (*Sterna antillarum*), lesser prairie-chicken (*Tympanuchus pallidicinctus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), and Arkansas river shiner (*Notropis girardi*). No critical habitat was identified (USFWS 2016).

Proposed Action

NPS proposes to establish a sustainable, multiuse trail system on the north side of Lake Meredith National Recreation Area (the park) to broaden the recreational opportunities available at the park. The proposed trail system (the North Side Trail System) would establish trails ranging from Upper Plum to Hackberry Butte. The trail head would be located at the Lower Plum Creek campground, locally referred to as the Meadows, to take advantage of existing park infrastructure (i.e., all-weather access road, parking, outback restroom, and picnic tables). A combination of new trail construction, upgraded existing social trail, and connected dirt roads would result in approximately 23 miles of multiuse trails. The project area evaluated for impacts includes a 100-foot wide corridor from the designated trail center line.

The 2 to 4-foot-wide trail would be primitive with no paved surfaces. The new trail system would be designed to blend into the natural surroundings, using native materials, and would offer visitors an improved recreational experience. In designing the proposed trail route, existing social trails would be considered for use to the extent feasible to minimize unnecessary impacts on natural and cultural resources. Some areas of the new trail, primarily areas with steep slopes that are prone to erosion, would require construction of rock walls, drains, and water bars. Local, natural materials would be used to gain elevation and prevent erosion on the new trail.

Effects Analysis

While the USFWS IPaC website indicates that least tern, lesser prairie-chicken, piping plover, red knot, and whooping crane have the potential to occur in Moore or Potter Counties, these species have not been documented in the park. The implementation of the proposed project would therefore have No Effect on these species (USFWS 2016; NPS, Wimer, pers. comm., 2016).

While Arkansas river shiner have not been documented in the project area, they have been documented in areas of the Canadian River upstream of the project area, so their occurrence in this area is possible. However, because a break-away swing bridge would be constructed where the trail crosses the Canadian River to protect the banks of the river and no construction activities would take place in the river, implementation of the proposed project would have No Effect on the Arkansas river shiner (USFWS 2016; NPS, Wimer, pers. comm., 2016).

No designated critical habitat occurs in the project area (USFWS 2016).

Conclusion

Based on the list of species potentially affected and the effects analysis described above, NPS has determined that the proposed project would have No Effect on species or designated critical habitat either listed or proposed for listing under the ESA. This analysis concludes NPS's responsibility under the ESA.

References

National Park Service (NPS)

2016 Personal communication via email with Arlene Wimer, Chief of Resource Management, Lake Meredith National Recreation Area and Alibates Flint Quarries National Monument. June 5, 2016.

United States Fish and Wildlife Service (USFWS)

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APPENDIX B—SECTION 106 CONSULTATION LETTERS

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U.S. Department of the Interior
NATIONAL PARK SERVICE
Lake Meredith National Recreation Area
Alibates Flint Quarries National Monument
P.O. Box 1460
Fritch, Texas 79036-1460

In reply refer to:
(LAMR) 1A2

November 3, 2015

Mr. Mark Wolfe
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276

RE: Initiation of Section 106 Consultation and Determination of Area of Potential Effect for the North Side Trail System at Lake Meredith National Recreation Area

Dear Mr. Wolfe:

The National Park Service proposes to establish a multi-use trail on the north side of Lake Meredith National Recreation Area (the park) to broaden the recreational opportunities available at the park by providing a primitive trail for multiple, non-motorized uses. The proposed trail system (the North Side Trail System) would establish trails ranging from Upper Plum to Hackberry Butte. The trail head would be located at the Lower Plum Creek campground to take advantage of existing park infrastructure (all-weather access road, parking, outback restroom, and picnic tables). New trail construction, converted administrative dirt roads, and modified existing social trails would be combined, resulting in approximately 23 miles of multiuse trails. An outback restroom would also be constructed in the upper reach of Big Canyon. The area of analysis would be a 100-foot work corridor from the designated trail center line.

The 2 to 4-foot-wide trail would be primitive with no paved surfaces. The new trail system would be designed to blend into the natural surroundings, using native materials, and would offer visitors an improved recreational experience. In designing the proposed trail route, existing social trails would be considered for use to the extent feasible to minimize unnecessary impacts on natural and cultural resources. Some areas of the new trail, primarily areas with steep slopes that are prone to erosion, would require construction of rock walls, drains and water bars. Local, natural materials would be used to gain elevation and prevent erosion on the new trail.

In accordance with section 106 (and section 110) of the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation regulations, 36 Code of Federal Regulations Part 800, the National Park Service would like to initiate consultation on this proposed project. This letter serves to: (1) notify you of the proposed project, and (2) request your input on the preliminary area of potential effect. The National Park Service is in the process of preparing an environmental assessment (EA) for this project. During this analysis, the trail alignment may be altered to avoid impacting sensitive resources, including historic properties. The National Park Service will notify the state historic

preservation officer of any changes to the area of potential effect. An overview map of the proposed project area is attached to this letter for your reference.

If you should have any questions or would like to schedule a meeting to discuss the project, please contact Arlene Wimer, Chief of Resource Management at (806) 857-0309. We appreciate your continuing assistance with National Park Service projects.

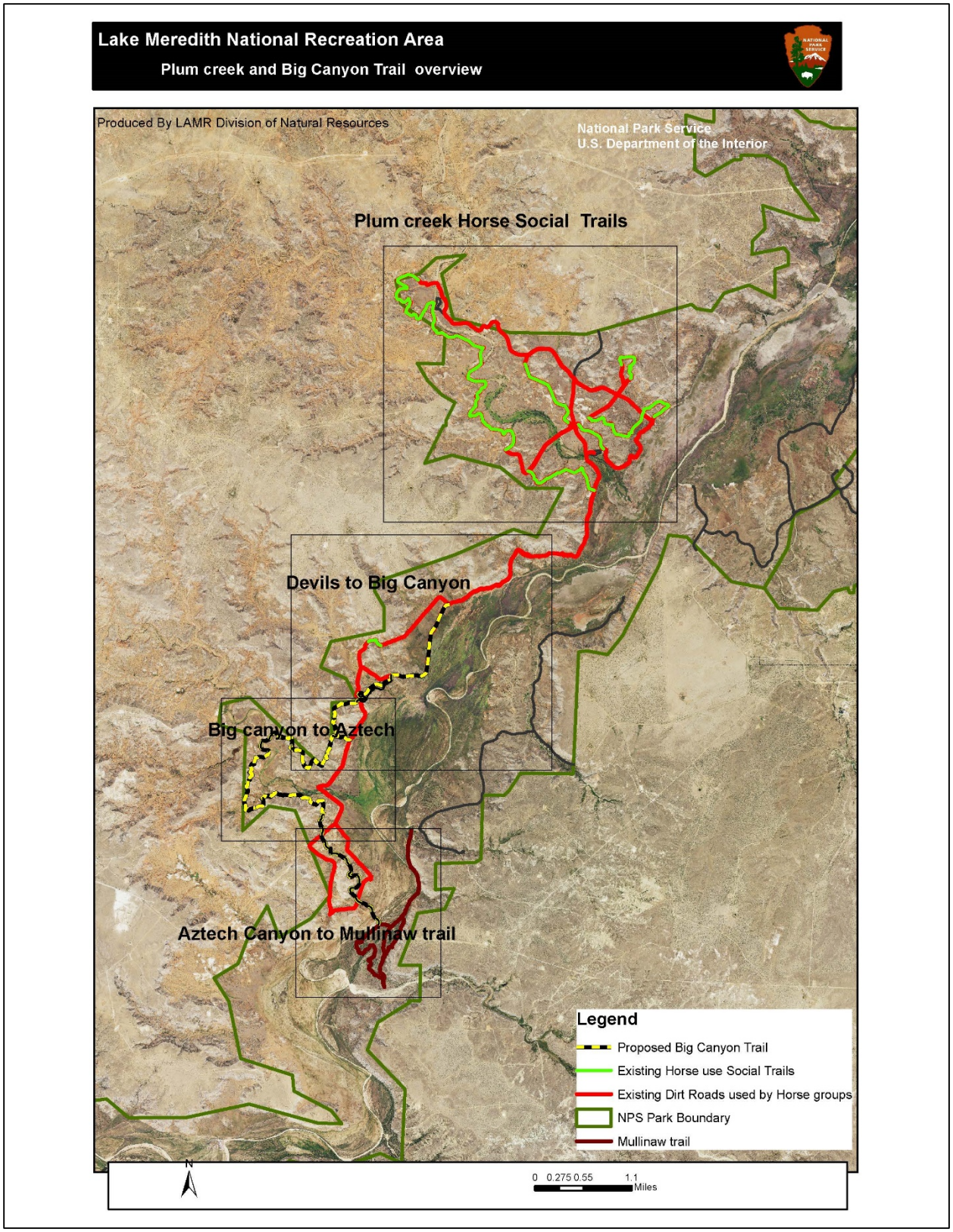
Sincerely,

Robert J. Maguire
Superintendent

Enclosure: Project Area Overview Map

I CONCUR:

Mark Wolfe Date
State Historic Preservation Officer


Lake Meredith National Recreation Area
Plum creek and Big Canyon Trail overview
Produced By LAMR Division of Natural Resources
National Park Service
U.S. Department of the Interior
Plum creek Horse Social Trails
Devils to Big Canyon
Big canyon to Aztech
Aztech Canyon to Mullinaw trail
Legend
Proposed Big Canyon Trail
Existing Horse use Social Trails
Existing Dirt Roads used by Horse groups
NPS Park Boundary
Mullinaw trail
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U.S. Department of the Interior
NATIONAL PARK SERVICE
Lake Meredith National Recreation Area
Alibates Flint Quarries National Monument
P.O. Box 1460
Fritch, Texas 79036-1460

In reply refer to:
(LAMR) 1A2

November 3, 2015

Misty Nuttle, President
Pawnee Nation of Oklahoma
P O Box 470
Pawnee, Oklahoma 74058

RE: Initiation of Section 106 Consultation and Determination of Area of Potential Effect for the North Side Trail System at Lake Meredith National Recreation Area

Dear President Nuttle:

The National Park Service proposes to establish a multi-use trail on the north side of Lake Meredith National Recreation Area (the park) to broaden the recreational opportunities at the park by providing a primitive trail that would be open to multiple, non-motorized uses. The proposed trail system (the North Side Trail System) would establish trails ranging from Upper Plum to Hackberry Butte. The trail head would be located at the Lower Plum Creek campground to take advantage of existing park infrastructure (all-weather access road, parking, outback restroom, and picnic tables). New trail construction, converted administrative dirt roads, and modified existing social trails would be combined, resulting in approximately 23 miles of multiuse trails. An outback restroom would also be constructed in the upper reach of Big Canyon. The area of analysis would be a 100-foot work corridor from the designated trail center line.

The 2 to 4-foot-wide trail would be primitive with no paved surfaces. The new trail system would be designed to blend into the natural surroundings, using native materials, and would offer visitors an improved recreational experience. In designing the proposed trail route, existing social trails would be considered for use to the extent feasible to minimize unnecessary impacts on natural and cultural resources. Some areas of the new trail, primarily areas with steep slopes that are prone to erosion, would require construction of rock walls, drains and water bars. Local, natural materials would be used to gain elevation and prevent erosion on the new trail.

In accordance with section 106 (and section 110) of the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation regulations, 36 Code of Federal Regulations Part 800, the National Park Service would like to initiate consultation on this proposed project. This letter serves to: (1) notify you of the proposed project, and (2) request your input on the preliminary area of potential effect. The National Park Service is in the process of preparing an environmental assessment (EA) for this project. During this analysis, the trail alignment may be altered to avoid impacting sensitive resources, including historic properties. The National Park Service will notify the state historic preservation officer of any changes to the area of potential effect.

The scoping brochure for the environmental assessment is attached to this letter for your review. We would appreciate receiving your review comments on the project scoping proposal within the 30 days of the date shown at the top of this letter.

If you should have any questions or would like to schedule a meeting to discuss the project, please contact Arlene Wimer, Chief of Resource Management at (806) 857-0309. We appreciate your continuing assistance with National Park Service projects.

Sincerely,

Robert J. Maguire
Superintendent

Enclosure: Public Scoping Brochure

I CONCUR:

[NAME] Date
[TRIBE]

Tribe	Name, Title	Street Address	City, State, Zipcode	Phone	Email
Apache Tribe of Oklahoma	Lyman Guy, Chairman	PO Box 1330	Anadarko, OK 73005-1220	(405) 247-9493	chairman@apachetribe.org
Apache Tribe of Oklahoma	Darin Cisco	PO Box 1330	Anadarko, OK 73005-1220	(405) 247-7494	apachendnvrcisco@yahoo.com
Caddo Nation of Oklahoma	Tamara Francis-Fourkiller, Chairperson	PO Box 362	Binger, OK 73009	(405) 656-2344	
Cheyenne and Arapahoe Tribes, Oklahoma	Eddie Hamilton, Governor	PO Box 167	Concho, OK 73022	(405) 422-7732	ehamilton@c-a-tribes.org
Cheyenne and Arapahoe Tribes, Oklahoma	Karen Little Coyote	PO Box 167	Concho, OK 73022	(405) 422-7443	klittlecoyote@c-a-tribes.org
Cheyenne and Arapahoe Tribes, Oklahoma	Andrew Willey	PO Box 167	Concho, OK 73022	(405) 422-7416	awilley@c-a-tribes.org
Comanche Nation, Oklahoma	Wallace Coffey, Chairman	PO Box 908	Lawton, OK 73507	(580) 492-3240	wallacec@comanchenation.com
Comanche Nation, Oklahoma	Anthony Monoessy	#8 SW D Avenue, Suite A	Lawton, OK 73502	(580) 595-9350	anthonym@comanchenation.com
Comanche Nation, Oklahoma	Jimmy Arterberry	#6 SW D Avenue, Suite C	Lawton, OK 73502	(580) 595-9960	jimmya@comanchenation.com
Ft. Sill Apache Tribe of Oklahoma	Jeff Haozous, Chairman	43187 US Hwy 281	Apache, OK 73006	(580) 588-2298	jeff@fortsillapache-nsn.gov
Ft. Sill Apache Tribe of Oklahoma	Michael Darrow	43187 US Hwy 281	Apache, OK 73006	(580) 588-2298	michael.darrow@fortsillapache-nsn.gov
Jicarilla Apache Nation, New Mexico	Ty Vincenti, President	PO Box 507	Dulce, NM 87528	(575) 759-4471	epetago@jicarilla-nation.com
Jicarilla Apache Nation, New Mexico	Clyde Vincenti	PO Box 1367	Dulce, NM 87528	(575) 759-1343	indian_rambler@yahoo.com
Jicarilla Apache Nation, New Mexico	Jeff Blythe	PO Box 1367	Dulce, NM 87528	(575) 759-0062	janthpo@gmail.com
Kiowa Indian Tribe of Oklahoma	Amber Toppah, Chairwoman	PO Box 369	Carnegie, OK 73015	(580) 654-2300	kbo@kiowatribe.com
ALFL Tribal Contacts	Amie Tah-Bone	PO Box 369	Carnegie, OK 73015	(580) 654-2300	museum@kiowatribe.com
Kiowa Indian Tribe of Oklahoma	Bridgette Satepeahtaw	PO Box 369	Carnegie, OK 73015	(580) 654-2300	bsatepeahtaw@kiowatribe.org
Mescalero Apache Tribe of the Mescalero Reservation, New Mexico	Danny Breuninger, President	PO Box 227	Mescalero, NM 88340	(575) 464-4494	d.breuninger@mescaleroapachetribe.com
Mescalero Apache Tribe of the Mescalero Reservation, New Mexico	Arden Comanche	PO Box 227	Mescalero, NM 88340	(575) 464-3005	
Mescalero Apache Tribe of the Mescalero Reservation, New Mexico	Holly Houghton	PO Box 227	Mescalero, NM 88340	(575) 464-9270	holly@mathpo.org
Pawnee Nation of Oklahoma	Misty Nuttle, President	PO Box 470	Pawnee, OK 74058	(918) 762-3621	cbutler@pawneenation.org
Pawnee Nation of Oklahoma	Rebekah Horsechief	PO Box 470	Pawnee, OK 74058	(918) 762-3227	rebekahh@pawneenation.org
Pawnee Nation of Oklahoma	Kellie Poolaw	PO Box 470	Pawnee, OK 74058	(918) 762-3227	kelliej@pawneenation.org
Wichita and Affiliated Tribes	Terri Parton, President	PO Box 729	Anadarko, OK 73005	(405) 247-2425	terri.parton@wichitatribe.com
Wichita and Affiliated Tribes	Gary McAdamas	PO Box 729	Anadarko, OK 73005	(405) 247-2425	gary.mcadams@wichitatribe.com
Delaware Nation, Oklahoma	C.J. Watkins, Acting President	PO Box 825	Anardarko, OK 73005	(405) 247-2448	chief@westerndelaware.nsn
Delaware Nation, Oklahoma	Nekole Alligood	PO Box 825	Anardarko, OK 73005	(405) 247-1403	nalligood@delawarenation.com

Add'l Apache tribes? As determined by NAGPRA consultation sign-in sheet…..?

COMANCHE NATION

Lake Meredith National Recreation Area
Attn: Arlene Wimer
P.O. Box 1460
Texas 79036-1460

December 1, 2015

Re: Initiation of 106 Consultation and Determination of Area of Potential Effect for the North Side Trail System at Lake Meredith National Recreation Area

Dear Ms. Wimer:

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of ***"No Properties"*** have been identified.

Please contact this office at (580) 595-9960/9618 if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana ,Resource Technician
#6 SW "D" Avenue , Suite C
Lawton, OK. 73502

Kiowa Tribe Museum
P.O. Box 369
Carnegie, Oklahoma 73015
580-654-2300 ext. 370

US Department of Interior
National Park Service
Lake Meredith National Recreation Area
Alibates Flint Quarries National Monument
P.O. Box 1460
Fritch, Texas 79036

11/9/15

RE: Initiation of Section 106 Consultation and Determination of Areas of Potential Effect for the North Side Trail System at Lake Meredith National Recreation Area

Dear Mr. Robert J. Maguire,

Thank you for informing the Kiowa Tribe of Oklahoma about the above referenced project. By initiating Section 106 consultation, we are allowed an opportunity to determine the potential effects that a project may have on cultural resources that are important to our tribe.

We made the conclusion of "no historic properties affected." If, however, any additional information becomes available our assessment may be revised. In the event that any archaeological or historical objects/materials are discovered during this project, the Kiowa Tribe requests that all work ceases, the area is secured, and that the Tribe is immediately notified.

Thank you for initiating the Section 106 consultation process. Any questions or comments regarding our determination of "no historic properties affected" can be forwarded to atahbone@kiowatribe.org or at the above letterhead.

Sincerely,

Amie Tah-Bone

Amie Tah-Bone
Museum Director/NAGPRA Representative
Kiowa Tribe of Oklahoma

11/9/15
Date

Form 1

APPENDIX C—PUBLIC SCOPING COMMENTS

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PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 1

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 11/06/2015	Date Received: 11/06/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

Great idea that will expand use of the area. I support this idea wholeheartedly.
">

PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 2

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 11/07/2015	Date Received: 11/07/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I fully support this trail project. a) for personal use, as I spend a lot of time mountain biking with friends at the Palo Duro Canyon trails as well as the trails at Buffalo Hill in Canyon, and the Children's home trails, and b) I meet so many travelers/vacationers, who are mountain biking or hiking in Palo Duro Canyon, so I know that locals as well as out of towners would benefit from this project.
">

PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 3

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 11/08/2015	Date Received: 11/08/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I am in favor of this family oriented recreational project.

As a newcomer from Colo. now living in Canyon we are searching the area for biking and hiking routes. I have found very few options. Over this summer we attended the tour of the flint rock area native american sites and loved the scenery of Lake Meredith.

I would love to explore the Lake Meredith area further with groomed wide access trails. A circle would work well around the lake itself. It is safer for children and pets with a wider path ways with bike and hike traffic.

Thanks for the opportunity to comment.
Cheryl

">

PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 4

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 11/08/2015	Date Received: 11/08/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

We recently drove around Lake Meredith looking for a campground. Why does Meredith not have any RV hook ups at any of its campgrounds? We would like to see RV hook ups (with water & electric). We live in Amarillo & are looking for a place to go on weekends in our travel trailer. One would think a National Park would include places for RVers to stay. There would certainly be a lot more interest in Meredith if it did have campgrounds with hookups, & would also be a way to generate profit from this type of campground.

Also, we would like to see better signage around Lake Meredith. We drove for miles, just trying to find the lake & some of the campgrounds. Surely there is easier access than we found, but the signs were unclear, as well as far & few between.
">

PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 5

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent: 12/02/2015	Date Received: 12/02/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form
Notes:	

Correspondence Text

I think the idea of trails in the Lake Meredith area is an excellent one. One can see so much from trails that one cannot see from a beach area. Not only would park visitors enjoy themselves but get some exercise as well.

Hopefully trails will be marked with the distance. Will these trails be used only by hikers/walkers or would the trails be opened to four wheeler traffic as well? I can attest to the damage that four wheelers do to trails having spent time hiking the mountains of Colorado. In fact some trails do not allow gas/diesel powered vehicles. Would be nice to not have to share the trails with motorized vehicles.

Not much of a beach person but I am a seasoned hiker/walker and would absolutely love to see the trails at Lake meredith become a reality. This is a definite yes for the development of trails at Lake Meredith.
">

PEPC Project ID: 60971, DocumentID: 69106
Correspondence: 6

Author Information

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Correspondence Information

Status: New	Park Correspondence Log:
Date Sent:	Date Received: 11/18/2015
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Letter
Notes:	

Correspondence Text

No question in my mind. We need the trails. Build the trails!!! The only thing that "might" be a problem can easily be solved. Keep the horse trails separate from the people trails. Sometimes the two don't mix well. Not often but some.
">