

**ENVIRONMENTAL ASSESSMENT FOR
Construction of a Temporary Trail and Hoist Location at a Bat Cave
Shannon County, Missouri**

Prepared by

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1.0 PURPOSE AND NEED

BACKGROUND

Bat Cave is located on the U.S. Geological Survey's Round Spring 7.5' topographic quadrangle at T30N, R5W, SW1/4 of section 1 on lands owned by The Nature Conservancy (TNC). Bat Cave, Shannon County was historically identified as a priority 1 hibernacula for the Indiana bat. During periods from 1976 to 1980, between 40,840 and 46,000 Indiana bats were observed in Bat Cave, Shannon County with a maximum past population of 123,800 in 1972. However, the population of Indiana bats at this site had plummeted to zero in 2005 and 2006 but 327 were observed in February 2011. Bat Cave, Shannon County was historically listed as a priority 2 cave and is currently the third largest gray bat hibernaculum in the state with about 48,500 to 50,000 bats. As noted by numerous authors, the decline of gray and Indiana bats throughout their range is largely due to disturbance of hibernacula. Although an internal fence had been erected to discourage disturbance of Bat Cave, Shannon County, there was repeated illegal entry into the site between 1998 and 2007. A large cut into the fence was repaired in 2007 and it was determined by the Missouri Department of Conservation (MDC) and The Nature Conservancy, in consultation with the U.S. Fish and Wildlife Service, in 2010 that a cave gate following recent advances in gating methods should be constructed to provide further protection to hibernating gray and Indiana bats. The proposed gate would consist of 30 tons of steel to be transported to the cave opening located above the Current River. The slopes near the cave are too steep for vehicular transport and steel too heavy for manual transport on the rugged slopes. These factors have lead us to the develop of a proposed steel transport system comprised of a cable and pulley system attached to a tower at the base of the slope and either a tree or the wall of the slope near the opening of the cave.

The property around Bat Cave is owned by The Nature Conservancy, and the interior of the cave is owned by The Nature Conservancy, with the back portion of the left branch of the cave owned by Missouri Department of Conservation. The cave is under a scenic easement deed with the National Park Service (NPS). These restrictions include the following:

- Under number 5 of the restrictions, "Cutting or permitting to be cut, destroying or removing any timber or brush, except as may be authorized in writing...."
- Under number 2 of the restrictions, "Erecting or building any structures on said lands, including major alterations to existing buildings, except as may be authorized in writing...."

The proposed project would include the clearing of a temporary trail and the construction of a temporary tower at the base of the slope for transportation of materials, both of which would require authorization in writing. Authorizations in writing for approval of any activity requires compliance with the National Environmental Policy Act (NEPA). This requires at minimum a screening of affected environment, analysis of the level of impacts (which may require an environmental assessment) and a decision document to be drafted and signed.

PURPOSE

The purpose of this project is to analyze a portion of a project to undertake necessary steps to permanently protect Bat Cave, Shannon County (hereafter Bat Cave) and to inhibit further human disturbance to the site. The purposes defined for this is to:

- Clear a small temporary trail for transportation of steel materials
- Construct a hoist system for transporting steel anchored at base of the slope by a constructed temporary tower and at the cave opening from tree or rock wall.

The National Park Service requires an environmental review for the portion of the project that there are restrictions specifically listed in the scenic easement for the property. The intent of the scenic easement is to make sure that the project will not adversely affect the scenic value of the property.

NEEDS

Bat Cave, Shannon County needs to be gated to prevent continued disturbance to roosting gray and Indiana bats. The cave needs gating to prevent human disturbance to hibernating bats which has been identified as a leading cause for the decline of both species in North America.

All cave dwelling bats in North America are threatened with significant declines and even possible extinction due to the spread of White-nose Syndrome (WNS) and the causative fungus, *Geomyces destructans*. Because human transmission has been identified as a possible means of spreading WNS, cave gating is one recommended procedure that would restrict human access while preventing disturbance.

White-nose Syndrome (WNS) and the causative fungus, *Geomyces destructans*, is estimated to be responsible for as much as a 75 percent decline in some bat populations in the eastern United States since WNS was first documented in 2006. *Geomyces destructans* has been recently documented on gray bats in Missouri. The likely continued spread of WNS to gray bats and Indiana bats in Missouri could be catastrophic for both species.

The alternative to use a helicopter to deliver steel and materials has been dropped because of problems in logistics, safety, and the long lead times required to schedule the service. A site visit made by Missouri National Guard aviation personnel determined that the grade of the slopes, above and below the cave, would prohibit a safe cargo drop area. Consequently, an alternative plan using a temporary cable hoist system situated below Bat Cave is the only way the project can be completed. The temporary construction of a cable hoist tower, limited trail construction and the removal of a minimal number of trees will be necessary to facilitate the gating of the site. Because fencing has not proven effective in deterring human disturbance to roosting gray and Indiana bats at Bat Cave, proper gating of the site is necessary to protect these two federally listed species.

This Environmental Assessment/Assessment of Effect has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR 1508.9), and the National Park Service Director's Order (DO)-12 (Conservation Planning, Environmental Impact Analysis, and Decision-making).

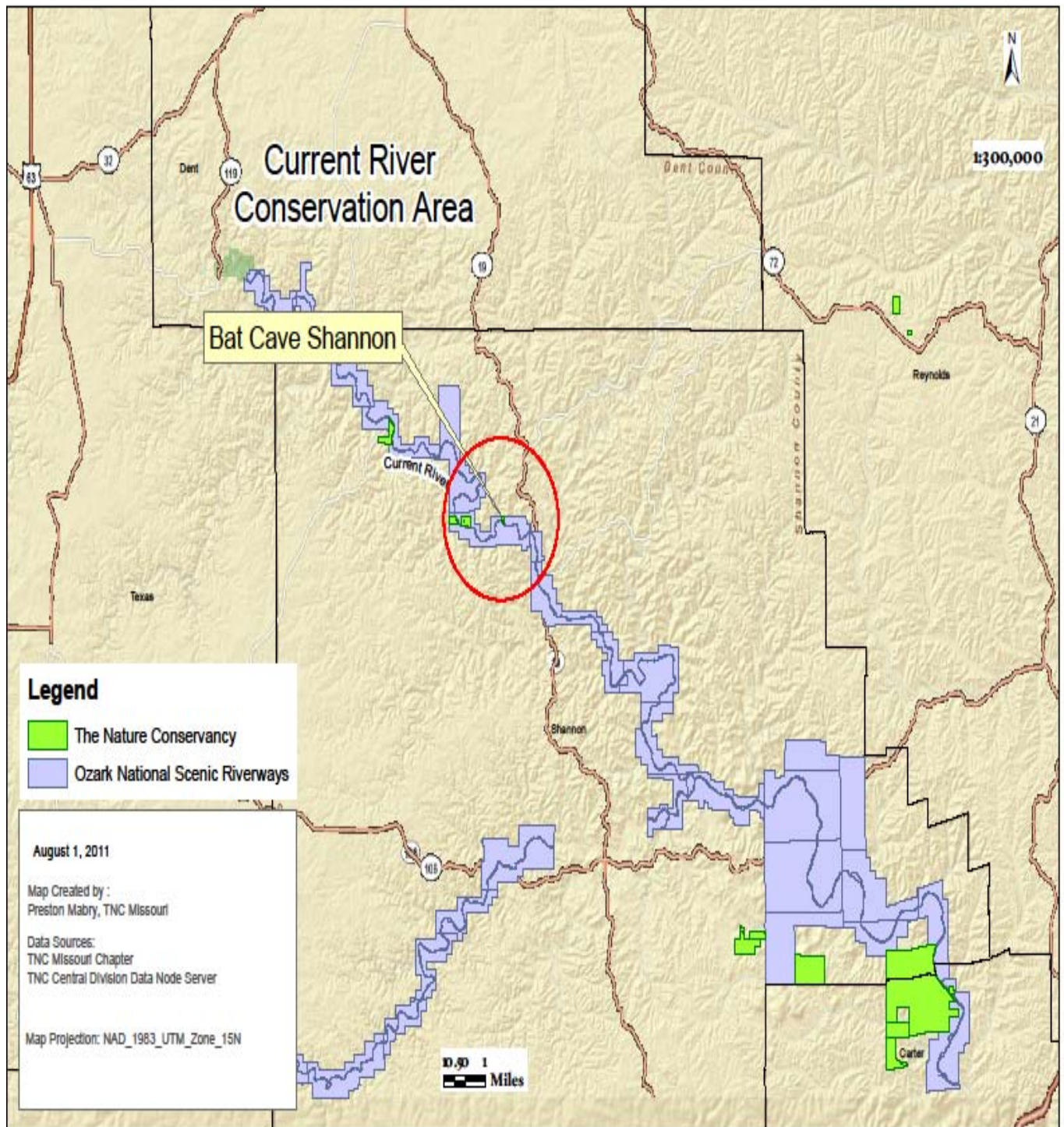


Figure 1 - Vicinity Location Map.

2.0 APPLICABLE REGULATORY REQUIREMENTS & COORDINATION

The Ozark National Scenic Riverways was established in 1964 “for the purpose of conserving and interpreting unique scenic and other natural values and objects of historic interest, including preservation of portions of the Current River and the Jacks Fork River in Missouri as free-flowing streams, preservation of springs and caves, management of wildlife, and provisions for use and enjoyment of the outdoor recreation resources...” (NPS 1964). Many properties within the legislated boundary of the park remain in private ownership. The NPS purchased scenic easements on most of these parcels of land, including the property for this project. The purpose of the easements is for the “preservation of the scenic values” of these properties. The easement contains restrictions on activities that the landowner must receive authorization in writing from NPS.

Two components of The Nature Conservancy’s proposal are identified as restrictions within the scenic easement deed. The construction of a trail from Current River State Park to the proposed hoist tower, and the removal of trees along the cable route to the cave entrance, are restricted activities under number 5 of the restrictions, “Cutting or permitting to be cut, destroying or removing any timber or brush, except as may be authorized in writing...” The placement of a cable hoist tower is also a restricted activity under number 2 of the restrictions, “Erecting or building any structures on said lands...” Both of these components of the proposal would require authorization in writing.

Authorizations in writing for approval of any activity over which the park exercises discretion on property subject to a scenic easement requires compliance with the National Environmental Policy Act (NEPA). According to NEPA and National Park Service (NPS) policy, this would require the screening of the affected environment, analysis of the level of impacts, and a decision document to be drafted and signed. Responsibility for the completion of the NEPA documents rests with The Nature Conservancy. After a screening of the affected environment, it was determined that an environmental analysis would be the appropriate NEPA pathway for a decision document. All NEPA analyses are subject to NPS review and approval.

This Environmental Assessment (EA) has been prepared to evaluate the impacts of the alternatives described in Section 3.0. The NPS is governed by laws, regulations, and management plans before, during, and after any management action considered under any NEPA analysis. The following are those that are applicable to the proposed action.

National Environmental Policy Act, 1969, as Amended

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established this country’s environmental policies, including the goal of achieving productive harmony between human beings and the physical environment for present and future generations. It provided the tools to implement these goals by requiring that every federal agency prepare an in-depth study of the impacts of “major Federal actions significantly affecting the quality of the human environment” and alternatives to those actions and required that each agency make that information an integral part of its decisions. NEPA also requires that agencies make a diligent effort to involve the interested members of the public before they make decisions that affect the environment.

NEPA is implemented through Council on Environmental Quality (CEQ) regulations (40 CFR 1500–1508) (CEQ 1978). The NPS has in turn adopted procedures to comply with the act and the CEQ regulations, as found in Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making (NPS 2001), and its accompanying handbook.

National Park Service Organic Act of 1916

By enacting the NPS *Organic Act* of 1916, Congress directed the U.S. Department of Interior and the NPS to manage units “to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (16 USC 1). Despite this mandate, the *Organic Act* and its amendments afford the NPS latitude when making resource decisions that balance resource preservation and visitor recreation.

Because conservation remains predominant, the NPS seeks to avoid or to minimize adverse impacts on park resources and values. However, the NPS has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (NPS 2006a). While some actions and activities cause impacts, the NPS cannot allow an adverse impact that would constitute impairment of the affected resources and values (NPS 2006a). The *Organic Act* prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts (16 USC 1a-1). An action constitutes an impairment when its impacts “...harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006a). To determine impairment, the NPS must evaluate “...the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006a).

Endangered Species Act

The *Endangered Species Act* (ESA) was enacted in 1973 with the purpose to protect endangered and threatened species and to provide a means to conserve their ecosystems. The law is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Any federal agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with these two agencies. The federal agency involved must work to conserve listed species and make sure that their actions do not jeopardize the continued existence of a listed species. Development of a plan to modify a federal project is developed in conjunction with the USFWS and the National Marine Fisheries Service so minimal impact would occur to listed species and their habitat.

National Parks Omnibus Management Act of 1998

The *National Parks Omnibus Management Act* (16 USC 5901 et seq.) underscores NEPA and is fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis should this be the case.

The *National Parks Omnibus Management Act* directs the NPS to obtain scientific and technical information for analysis. The NPS handbook for Director’s Order 12 states, “if such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative for decision will be modified to eliminate the action causing the unknown or uncertain impact or other alternatives will be selected” (NPS 2001).

Other legislation and executive orders, which may be applicable to the activities addressed in this EA, include:

- Section 404 of the Clean Water Act permitting and State water quality certification through Section 401 of the Act.
- Executive Order 11990, Protection of Wetlands.
- The Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.)

- Executive Order 11988, Floodplain Protection.
- 36 CFR 2.12, Audio disturbances, and 3.7, Noise Abatement

NATIONAL PARK SERVICE MANAGEMENT POLICIES 2006

The NPS *Management Policies 2006* (NPS 2006a) is the basic NPS-wide policy document, adherence to which is mandatory unless specifically waived or modified by the NPS Director or certain departmental officials, including the U.S. Secretary of the Interior. Actions under this EA are in part guided by these management policies.

Impairment

According to NPS *Management Policies 2006*, an action constitutes an impairment when an impact "...would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS 2006a). Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. "An impact to any park resource or value may... constitute impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance (NPS 2006a)."

Impairment findings are not necessary for visitor use and experience, visitor and employee safety, park operations and management, or socioeconomics because impairment findings relate back to park resources and values. These impact areas are not generally considered to be park resources or values according to the *Organic Act*, and cannot be impaired the same way an action can impair park resources and values. An impairment determination for the preferred alternative will be provided in the finding of no significant impact.

DIRECTOR'S ORDERS

Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making and Handbook

NPS Director's Order 12 and its accompanying handbook (NPS 2001) lay the groundwork for how the NPS complies with NEPA. Director's Order 12 and the handbook set forth a planning process for incorporating scientific and technical information and establishing a solid administrative record for NPS projects.

NPS Director's Order 12 requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. It is crucial for the public and decision makers to understand the implications of those impacts in the short and long term, cumulatively, and within context, based on understanding and interpretation by resource professionals and specialists. Director's Order 12 also requires that an analysis of impairment to park resources and values be made as part of the NEPA document.

Natural Resources Management Reference Manual NPS-77

The purpose of this document is to provide guidance to park managers for all planned and ongoing natural resource management activities. Managers must follow all federal laws, regulations, and policies. This document provides the guidance for park management to design, implement, and evaluate a comprehensive natural resource management program (NPS 2004).

Other regulatory requirements, which may be applicable to the activities addressed in this EA, include:

- Director's Order No. 77-1, Wetland Protection.
- Director's Order No. 77-2, Floodplain Management.
- Director's Order 47, Soundscape Preservation and Noise Management

1984 General Management Plan and Development Concept Plan

A general management plan (GMP) provides park managers with the direction, goals, and objectives for making decisions on park operations. The current GMP provided the foundation for actions undertaken in previous developments in the park and will continue to be used to guide and/or develop management actions. A new GMP is in the beginning phases and is expected to be put into operation within the next 3–5 years. Until that time, any proposals in this EA must be consistent with the 1984 GMP. The development concept plans included within the GMP are site specific development recommendations for the redesign, replacement, relocation, or upgrading of facilities.

3.0 ALTERNATIVES

As a result of the public and internal scoping process, the no-action alternative and one action alternative for addressing the purpose and need were selected for analysis in this EA. Each of the alternatives has been analyzed independently. The alternatives that have been evaluated are:

Alternative A – No action

Alternative B – Install a temporary trail from the west boundary of Current River State Park to a point where a temporary tower on the riparian terrace of the Current River on the property of The Nature Conservancy would be constructed. This trail would be used by light vehicles for transport of steel to the tower site. Also to install a temporary tower made of steel that would serve as an anchor point for a metal cable hoist for moving materials from the river bottom terrace to the cave gate opening approximately 100 feet above the Current River.

3.1 Description of Alternatives

ALTERNATIVE A – No action

Under the No-Action alternative, no modifications or creation of a temporary trail and tower hoist would occur at the site. The existing cave gate would remain in place as is and would provide minimal protection to human and viral threats to the existing occupant species.

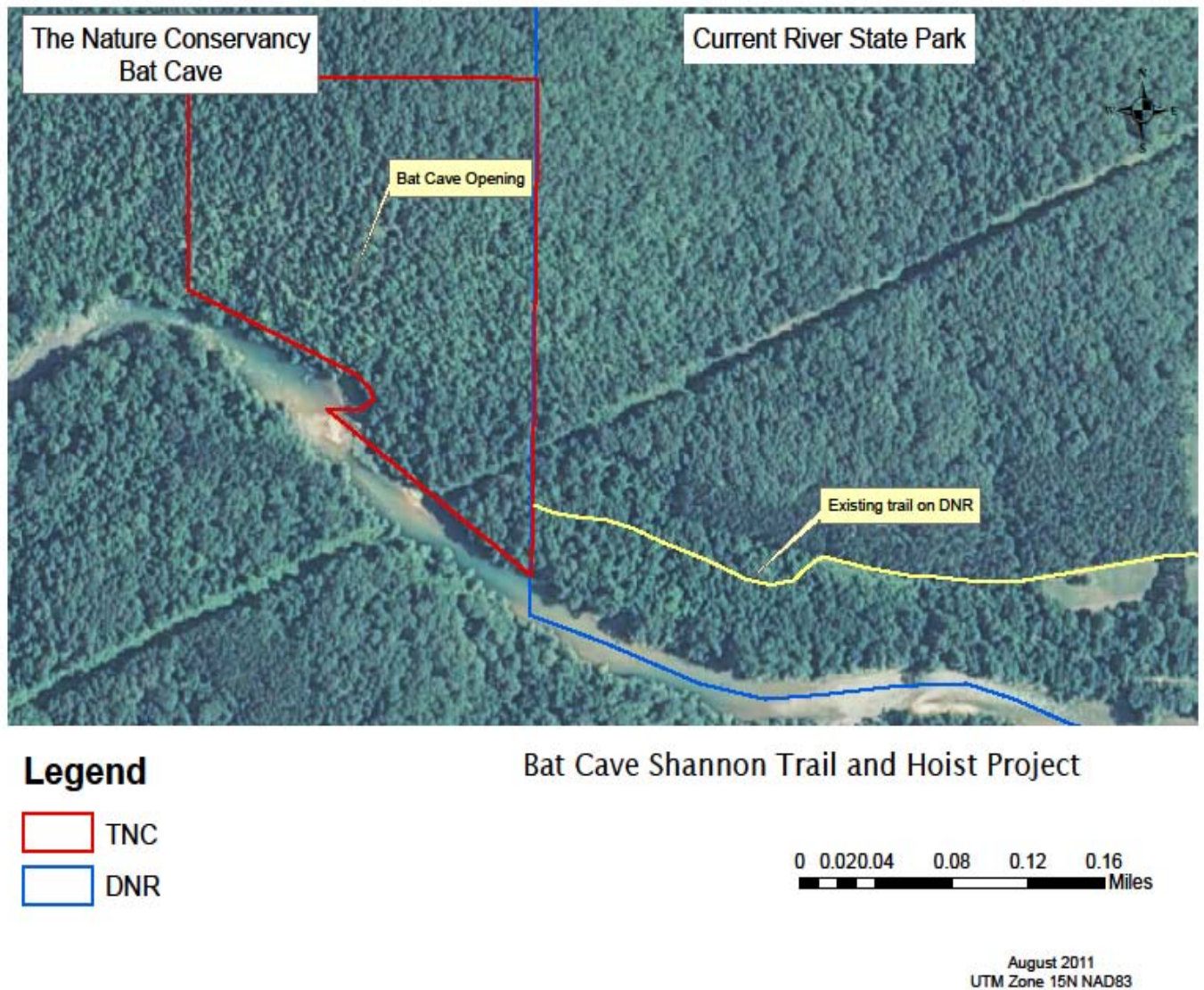


Figure 2: Alternative A-Proposed Actions Aerial photo 2010

ALTERNATIVE B – Install a temporary trail from the west boundary of Current River State Park to a point on the riparian terrace on the property of The Nature Conservancy where a temporary tower would be constructed. Also, to construct and install a temporary steel tower and cable hoist that would serve as an anchor point for moving cave gate building materials from the river bottom terrace to the cave gate opening approximately 100 feet above the Current River.

Install temporary trail

Install 20 foot wide by 200 yard long temporary trail from the west boundary of Current River State Park to a point where a temporary tower and cable hoist would be constructed on property owned by The Nature Conservancy. This trail would be used by light trucks, tractors, or ATV's with trailers for the transportation of steel for the installation of one small gate and another larger cave gate in Bat Cave; as well as, the removal of the existing gate. The trail will be cleared by hand crew, tractor with bush hog and possible dozer for moving heavy dead down woody material. Soil disturbance will be kept to a minimum and all vegetation removed will be cut and uprooting of material will be avoided. Live trees 6 inches to 2 inches will be removed by hand crews with chainsaw and all shrubs less than 2 inches in diameter will be removed by tractor and bush hog. The herbaceous understory will be removed by brush hog or string trimmer. To reduce unnatural soundscapes that could possibly harm species of conservation concern, construction of trail and vehicular traffic would occur during a less critical time range from April 1 to June 30, 2012. Vehicular traffic during would occur during dryer times to reduce rutting and any impact of erosion would be negligible. After completion of the project the trail will be allowed to be naturally vegetated.

The Nature Conservancy strives for ecological biodiversity on all of its lands and aggressively suppresses introduced vegetation that would be considered “non-native” and “noxious.” The site currently is monitored by TNC staff and volunteers, as well as by other natural resource professionals, throughout the year. Any vegetation meeting these criteria found on site would be reported and removed by methods deemed appropriate by TNC and NPS.

Temporary steel tower and cable hoist

Construction of a temporary tower would serve as an anchor point for a cable hoist running upslope to the Bat Cave opening approximately 93 feet above the Current River. The tower would be placed at a point on the terrace near the river and would be constructed from a range of two following options:

- Construction of a 10 to 20 feet tall steel tower mounted onto a small dozer.
- Construction of a 10 to 20 feet tall steel tower secured in the ground which could easily be removed with minimal ground disturbance.

The number of cable hoists established will be from one to three sections depending on mobility of steel. The first 150 feet section of metal cable hoist would be anchored by a tower at the base of the slope and would be anchored in a tree near the cave opening. With help from foresters from the Missouri Department of Conservation, small canopy limbs would be pruned in a way to prevent any contact with cable and steel material while not harming overall health of trees. The next two possible cable hoists would occur near the opening of the cave on the upland slopes. These cables would be mounted to trees or large rocks or rock walls near the opening and would be 100 to 200 feet in length.

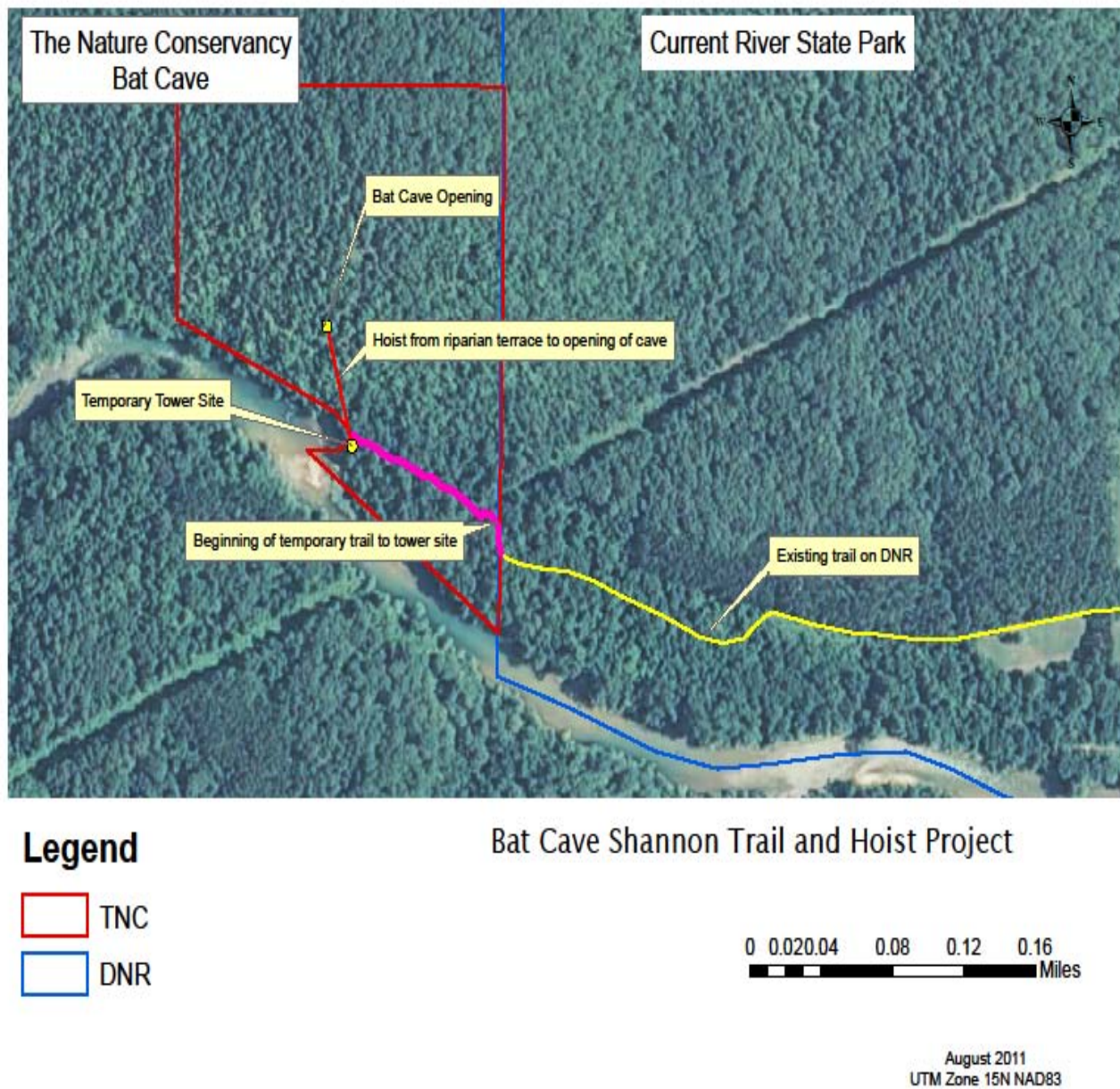


Figure 3 - Alternative B – Proposed Actions (Aerial Photo 2010).

3.2 Comparison of Alternative Effects

Table 1: Summary of the Impact Analysis.

		Alternative A (No-Action)	Alternative B Installation of temporary trail and construction of temporary tower and hoist
RESOURCE AREAS	Riparian Vegetation	No effect	Minor short-term adverse
	Threatened, Endangered, and Species of Special Concern	No effect	Negligible
	Visual Quality	No effect	Minor short-term adverse
	Soundscape	No effect	Minor short-term adverse
	Soils	No effect	Negligible to Minor Short-term adverse

3.3 Environmentally Preferable Alternative

The environmentally preferable alternative is determined by applying the criteria suggested by the Council on Environmental Quality (CEQ), which provides direction in its guidance Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (1981). CEQ defines the environmentally preferable alternative as: "...this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources." Using these criteria, it was determined that Alternative A- No Action, provides the greatest level of protection of resources of the alternatives evaluated in this EA. The environmental assessment evaluated the resources that are impacted by activities listed as restricted in the scenic easement. This does not take in to account the benefits that a new cave gate would make in the protection of the cave habitat since that is not a restricted activity.

3.4 Agency Preferred Alternative

The agency preferred alternative is to install a temporary trail from the west boundary of Current River State Park to a point on the riparian terrace on the property of The Nature Conservancy where a temporary tower would be constructed. Also to construct and install a temporary steel tower and cable hoist that would serve as an anchor point for moving cave gate building materials from the river bottom terrace to the cave gate opening located approximately 100 ft in elevation above the Current River.

The agency has chosen this alternative because it fulfills the goals outlined in the purpose and need while mitigating cumulative effects of human disturbance and disease on threatened and endangered species that utilized the cave. Issues having a strong impact on the decision making process were the fact that this

process, while having some temporary affects to the riparian vegetation, are outweighed by the importance of protection of threatened and endangered species that occur in the area.

4.0 AFFECTED ENVIRONMENT

This chapter of the environmental assessment describes existing resources and environmental conditions in the site specific project areas potentially affected by the alternative proposals being considered. These sites are the riparian area and small strip of slope located west of the boundary of the Department of Natural Resources property owned by the Nature Conservancy approximately 1.2 miles upstream of the Current River State Park (Alton Club) on the north side of the Current River.

4.0.1 Impact Topics Selected for Analysis

Topics addressed in this section and subsequently analyzed in Section 5 (Environmental Consequences) were selected based on their relevance as indicated by site visits, project scoping, reference documents and regulatory agency input. The topics chosen for analysis are extensive and include: riparian vegetation, threatened, endangered, and species of special concern, visual quality, soundscape and soils.

4.1 Riparian Vegetation

The project area lies within the riparian corridor and adjacent upland slopes along the upper Current River. Riverfront and Bottomland Forest dominate the riparian corridor with the upland slopes being of both pine and oak forests as well as Dolomite glade/woodland complex. A portion of the riparian area was noted in a 1960 aerial photo as a open agricultural field(Fig 4), and an electric line easement is currently present as well. Based on a site visit the Riverfront and Bottomland Forest is dominated by Sycamore (*Platanus occidentalis*), Green Ash (*Fraxinus pennsylvanica*), Elm (*Ulmus spp.*)and Oak (*Quercus spp.*) species. The uplands are dominated by Shortleaf Pine (*Pinus echinata*) and oaks (*Quercus spp.*) with the glade having a prominence of Chinkapin oak (*Quercus muehlenbergii*) and Eastern Red Cedar (*Juniperus virginiana*).



Figure 4: 1960 photo of old field with reference to highline

4.2 Threatened, Endangered, and Species of Special Concern

State and federally listed species were identified through discussions with park staff, informal consultation with the U.S. Fish and Wildlife, and the (State) Missouri Department of Conservation Natural Heritage Database. Formal consultation was initiated with the U.S. Fish and Wildlife Service during the scoping period for this project (*Refer to Chapter 6.0 Section 6.2*). Based on distribution and/or historical information, habitat for the following Sensitive Species may be present or affected within the project areas and the possible impacts are addressed in the environmental consequences analysis.

Gray bat (*Myotis grisescens*)

This species is federally listed as endangered. It is one of the largest of Missouri's *Myotis* bats, and it occupies caves year round (USFWS 2009). Gray bats occupy cold-trap caves in the winter and warmer caves during the summer, often within two miles of rivers, streams or lakes. In summer months, female gray bats live in maternity colonies of a few hundred to thousands of individuals from late May to August. Foraging is strongly correlated with open water. Gray bats are endangered largely because of their habit of living in very large numbers in only a few caves where humans may disturb them. Winter surveys conducted by MDC biologists have shown that there have been up to 50,000 individuals hibernating in the Bat Cave. This large volume of bats in one area tends to make their population extremely vulnerable to human disturbance as well as disease.

Indiana bat (*Myotis sodalis*)

This species is listed as federally endangered. This species is insectivorous and needs cold caves with stable temperatures around 40 degrees Fahrenheit with suitable relative humidity for survival. Indiana bats hibernate through the winter in limestone caves and emerge from hibernation in early spring to summer roosting areas. During the foraging season these bats tend to be around streams and roost under the bark of large trees. Roost trees are typically within canopy gaps in a forest, or along a fence line in a wooded area. In the winter of 2011 a small population of 327 Indiana bats was found at Bat Cave. One of the biggest threats to this species is human disturbance during hibernation as well as introduction to disease.

T& E Species That Are Nearby But Not In The Project Area

1. Ozark hellbender (*Cryptobranchus alleganiensis bishopi*)—although the Ozark hellbender is found in the Current River, none of the activities of this project will in any way affect the river or the riparian corridor.
2. Hine's emerald dragonfly (*Somatochlora hineana*)—there are no wetlands or streams in the project area. The bluff and the associated hill slope above the cave are dry.
3. Virginia sneezeweed (*Helenium virginicum*)—no sinkhole ponds exist in the project area.

4.3 Visual Quality

Bat Cave Shannon lies upstream from the Current River State Park boundary. This area has a high visual quality with views of limestone cliff bluffs and clear water. During the 1960's portions of the area were once an old field, but managers have allowed this area to go through natural succession and is now dominated by bottomland forest consisting of larger canopy trees of sycamores, elms and oak species with a dense understory of dogwood and black gum shrubs with only natural disturbances occurring during high water periods.

4.4 Soundscape

The project area lies within the Current River bottomland riparian corridor, an environment which supports a rich 'natural soundscape'. The natural soundscape that occurs within the bottomland corridor includes all

naturally occurring sounds---in the absence of human-generated noise. The natural soundscape also encompasses “natural quiet” that occurs in the absence of either natural or human-generated sound. The natural soundscape along the forested river bottomlands varies with the seasons, and with the hour of day or night. The natural soundscape differs within in the depth of the forest, or along the forest edge, or within the expanse of an open field, or at the river.

Human-caused sounds are distinguished from the natural soundscape. The sources of human-caused sound within the park, and in particular along the rivers, and most notably during summer weekends, are by and large related to water recreation and those activities associated with river use. During periods of peak use on summer weekends at the Current River near Bat Cave, human-caused sound from appropriate activities can be elevated. Weekdays in summer can be calm with very little noise intrusion except for an occasional group of visitors.

4.5 Soils

Soils are classified by a complex taxonomy that includes soil associations, series and phases. Soil associations represent the largest and most general classification. A soil association is a landscape that has a distinctive proportional pattern of soils and is named for the major soil types that in represents. It normally consists of one or more major soil series and at least one minor soil series. A soil series is a collection of soils that have major layers similar in thickness, arrangement, and other important characteristics, but may differ in surface layer texture. Each soil series is name for a town or other geographic feature near the location where the series was first observed and mapped. Soil phases are more detailed classifications that differentiate soils of the same series based on characteristics that affect the use of soils, such as texture of the surface soil, slope or stoniness (USDA 1999).

Information was taken from a Soil Survey of Shannon County, Missouri, part of the National Cooperative Soil Survey conducted by the Natural Resources Conservation Service. Soils occurring within the project are mapped in Figure 5 along with Table 2 of soil descriptions with characteristics in the general vicinity.

Soil Map--Shannon County, Missouri

Bat Cave Shannon

Map Unit Legend

Shannon County, Missouri (MO203)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73042	Niangua-Bardley complex, 15 to 50 percent slopes, extremely stony	0.0	0.0%
73055	Alred-Rueter complex, 15 to 35 percent slopes, very stony	0.0	0.0%
73139	Poynor-Clarksville-Scholten complex, 8 to 15 percent slopes, stony	1.8	9.3%
73269	Brussels-Gasconade-Rock outcrop complex, 35 to 90 percent slopes, very bouldery	5.3	27.5%
73341	Gepp-Arkana complex, 15 to 55 percent slopes, rocky	9.9	51.0%
75417	Reife-Sandbur complex, 0 to 3 percent slopes, frequently flooded	2.4	12.2%
Totals for Area of Interest		19.3	100.0%

Table 2: Soil Descriptions

Bat Cave Soil Map

Shannon County, Missouri

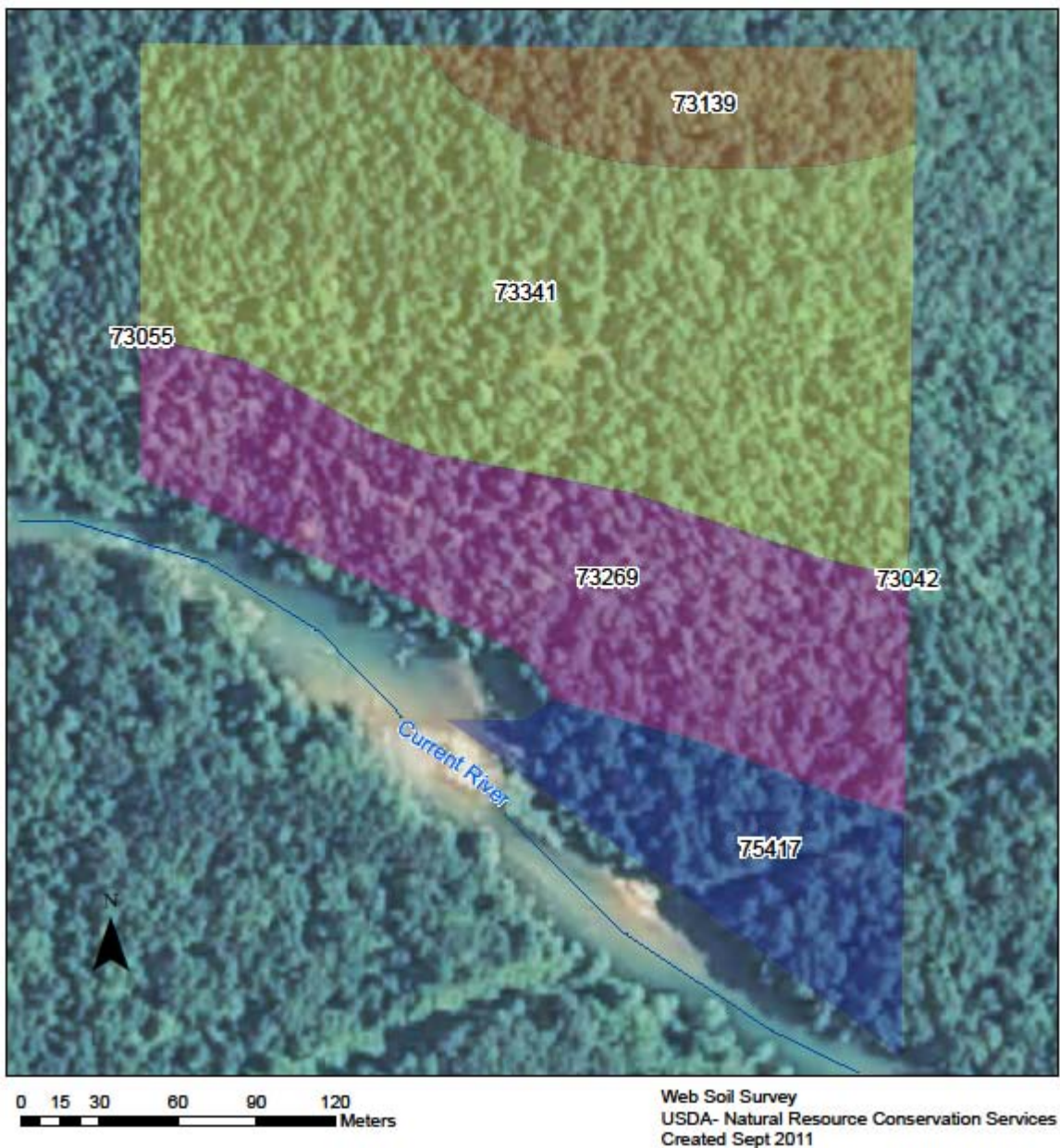


Figure 5: Soil Map of Bat Cave Shannon

4.0.2 Impact Topics Considered, but Dismissed from further Analysis

Some impact topics were considered for analysis, but eliminated from further analysis including water quality, wetlands, natural fluvial processes and floodplains. A brief rationale for dismissal is provided for each topic. Potential impacts to these resources would be no impact, localized and most likely immeasurable.

Water Quality

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nations' waters, enhance the quality of water resources, and to prevent, control, and abate water pollution. The proposed site is not in the waterway and has such a small footprint that soil disturbance should be minimal and would not impact water quality. As a result, water quality was dismissed from further analysis.

Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Wetlands do not occur in or near the proposed project site.

Floodplains

The work to be completed in this project is temporary and small in nature. The clearing of a trail and construction of a temporary tower will in no way impact the floodplains ability to move water downstream. Any impacts from this project would be immeasurable and therefore dismissed.

Cultural Resources

The scenic easement that the National Park Service acquired for this private property was for the preservation of the scenic value of the area. The easement places restrictions on the landowner to protect the scenic value, and no other values are mentioned in the easement. Using solicitor advice and opinion as our guidance, the National Park Service does not exercise any discretion over the cultural resources of the property and cannot require the landowner to conduct an assessment of these resources. However, the Missouri Department of Conservation is a partner of this project, and has been in consultation the Missouri Department of Natural Resources State Historic Preservation Office to ensure that the cultural resources are considered.

5.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA forms the scientific and analytic basis for the comparisons of alternatives as required by 40 CFR 1502.14. This discussion of impacts (effects) is organized in parallel with Section 4.0 (Affected Environment) and is organized by resource area. For each resource area, a brief description of the methodologies used to evaluate the impacts is presented, followed by discussions of the No-Action Alternative and each action alternative. To the extent possible, the direct, indirect, short-term, long-term, beneficial, and adverse impacts of each alternative are described for each resource area. The study area for each resource impact is assessed in direct relationship to those resources affected in the immediate site-specific local area where alternative actions are proposed (Alternatives A, B, C). Cumulative impacts are discussed in the context of the definition given in 40 CFR 1508.7.

The impact analysis involved the following steps:

- Identifying the area that could be affected.
- Comparing the area of potential effect with the resources selected for evaluation.
- Identifying the intensity (negligible, minor, moderate or major), context (Are the effects site-specific, local, or even regional?), duration (Are the effects short-term or long-term?), and type (direct or indirect) of effect, both as a result of this action and from a cumulative effects perspective.
- Identifying whether effects would be beneficial or adverse. The criteria used to define the intensity of impacts associated with the analyses are presented in the methodologies of the individual impact topics.
- Identifying mitigation measures that may be employed to offset or minimize potential adverse impacts.
- The impact analyses were based on professional judgment using information provided by resource management specialists from The Nature Conservancy, Missouri Department of Conservation, Missouri Department of Natural Resources, U.S. Fish and Wildlife Service, park staff, relevant references and technical literature citations, and subject matter experts.

Cumulative Impacts: The Council of Environmental Quality (CEQ) regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 CFR 1508.7). If applicable, cumulative impacts are addressed in each separate analysis of a resource area. The only other activities occurring in the project area is the actual construction of the cave gate.

Intensity, Duration, and Type of Impact - Intensity thresholds are evaluated on a continuum scale from barely detectable (negligible) to substantial alteration of current conditions (major) with certain measurable milestones in between (minor and moderate). Duration of impacts are evaluated based on the short-term (0-12 months) or long-term nature (next 10 years) of alternative-associated changes on existing conditions. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative. More exact interpretations of intensity, duration, and type of impact are given for each resource area examined as required. Professional judgment is used to reach reasonable conclusions as to the intensity and duration of potential impacts.

5.1 Riparian Vegetation

METHODOLOGY

Maps illustrating vegetation cover within the park were referenced (*Mapping Vegetation Communities in Ozark National Scenic Riverways: Final Technical Report to the National Park Service* - USGS 2006), and used to identify baseline conditions within the study area.

IMPACT THRESHOLDS

Four separate sets of impact thresholds, ranging from negligible to major intensity, were defined to address potential impacts on riparian vegetation. Vegetation impacts were determined by examining the potential effects of the proposed actions and visitor use on vegetation. The following impact thresholds were established to describe the relative changes in vegetation under the various alternatives being considered:

- **Negligible:** The impact would be at the lowest levels of detection or barely measurable with no perceptible consequences, either adverse or beneficial, to vegetation. Impacts would have no measurable or perceptible changes in plant community size, integrity, or continuity.

- **Minor:** Impacts would be measurable or perceptible but would be localized within a relatively small area. The overall viability of the plant community would not be affected and, if left alone would recover. Affected area where disturbance is expected to occur would not contain any rare plant species.
- **Moderate:** Impacts would cause a change in the plant community (e.g. abundance, distribution, quantity, or quality); however, the impact would remain localized. Affected area where disturbance is expected to occur would not contain any rare plant species.
- **Major:** Impacts to the plant community would be substantial, highly noticeable, and permanent. Affected area where disturbance is expected to occur, could contain specimens of rare plant species in finite quantities provided associated identified populations outside the immediate area of impact would not be compromised as a result of the disturbance.

ALTERNATIVE A – No action

Analysis: In the absence of a new trail being established there would be no change to the riparian vegetation. The plant communities would be continued to be disturbed only by foot traffic as well as natural flooding.

Cumulative Impacts: It is reasonable to surmise that the vegetation impact would not occur no unnatural impact would occur to the plant communities over time.

Conclusion: Alternative A (No-Action) would result in negligible impacts to the riparian corridor.

ALTERNATIVE B – Install a temporary trail from the west boundary The Current River State Park to a point w on the riparian terrace on the property of The Nature Conservancy where a temporary tower would be constructed. Also to construct and install a temporary steel tower and cable hoist that would serve as an anchor point for a for moving cave gate building materials from the river bottom terrace to the cave gate opening approximately 100 ft above the Current River.

Analysis: The installation of a temporary trail will impact approximately 12,000 square feet vegetation within the bottomland Forest. Any vegetation would be cut at the base and all root systems left intact. Perennial plants would be able to grow back from their root stocks and annuals could reseed in any exposed soil. Currently approximately 2000 square feet of the total 12,000 square feet of vegetation impacted is on ground that was either once an old field or is currently in an electric line easement. A site visit revealed that less than 20 understory trees from 4 to 6 inches in diameter would be removed. Most removal of understory shrubs, species including Dogwood (*Cornus florida*) Blackgum (*Nyssa sylvatica*) ect., are 2 inches or less in diameter and can be removed by tractor and brush hog. Impacts to mature trees would be minimal due to minimal impact on the soil. It is expected that associated minor vegetated disturbance will occur during the construction phase and transportation phase, but this should only last up to 3 weeks.

The trail would be allowed to naturally re-vegetate. Any noxious vegetation found during the operation would be removed in a manner to diminish any seed stock encroaching into the disturbed area. Since this site is a TNC preserve efforts would be made to monitor the site and suppress any noxious weeds that could be found on the property.

The proposed tower site is in an area near the river, but would not impact any stream bank vegetation. The site has a large gravel substrate with a mix of some sand and soil. Very little vegetation is found in the area, however some noxious weeds *Serecea lespedeza* (*Lespedeza cuneata*) were found at the site.

The cable hoist system should have no impact on the vegetation on the forest floor. It will impact less than 1000 square feet of existing canopy. This impact would be only temporary and would grow back naturally and would not impact the overall health of any individual tree species.

Cumulative Impacts: The installation of a temporary trail will temporarily affect the vegetation in the riparian area. The natural communities in this area would still be intact and able to thrive due to the small and temporary nature of the trail. The cable hoist system would temporarily change the visual aesthetics of the canopy in a small area, but should not in any way affect the natural plant communities.

Conclusion: Alternative B would cause minor temporary impacts to vegetation in the immediate project area during construction. Long-term impacts to vegetation communities within the project area would be negligible.

5.2 Threatened, Endangered, and Species of Special Concern

METHODOLOGY

Identification of state and federally listed species was accomplished through discussions with TNC staff, informal consultation with U.S. Fish and Wildlife Service (USFWS), and utilization of the (State) Missouri Department of Conservation Natural Heritage Database.

An analysis of the potential impacts to each species listed in the letter is included in this section. According to the U.S. Fish and Wildlife Service who monitor and manage all endangered species, none of the alternatives would adversely affect any of the listed species (See Figure 7).

Primary steps in assessing impacts on listed species were to determine (1) which species are found in areas likely to be affected by management actions described in the alternatives, (2) habitat loss or alteration caused by the alternatives, and (3) displacement and disturbance potential of the actions and the species' potential to be affected by activities. The information contained in this analysis was obtained through best professional judgment of TNC staff and experts in the field, and by conducting literature review.

IMPACT THRESHOLDS

The Endangered Species Act defines the terminology used to assess impacts to listed species as follows:

- **No effect:** When a proposed action would not affect a listed species or designated critical habitat.
- **May affect / not likely to adversely affect:** Effects on special status species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or are completely beneficial.
- **May affect / likely to adversely affect:** When an adverse effect to a listed species may occur as a direct or indirect result of proposed actions and the effect either is not discountable or is completely beneficial.
- **Is likely to jeopardize proposed species / adversely modify proposed critical habitat (impairment):** The appropriate conclusion when the U.S. Fish and Wildlife Service identifies situations in which the proposal could jeopardize the continued existence of a proposed species or adversely modify critical habitat to a species within or outside park boundaries.

ALTERNATIVE A – No action

Analysis: No effects to federally or state listed threatened, endangered, or species of conservation concern are expected as a result of implementing the no-action alternative.

Cumulative Impacts: No cumulative effects to threatened, endangered, or species of conservation concern are expected as a result of implementing the no-action alternative.

Conclusion: This alternative may affect/not likely to adversely affect threatened, endangered and species of conservation concern.

ALTERNATIVE B – Install a temporary trail from the west boundary of Current River State Park to a point where a temporary tower on the riparian terrace the Current River on the property of The Nature Conservancy would be constructed. This trail would be used by light vehicles for transport of steel to the tower site. Also to construct and install a temporary tower and cable hoist made of steel that would serve as an anchor point for moving materials from the river bottom terrace to the cave gate opening approximately 93 feet above the Current River.

Analysis: The temporary trail will be cleared using hand and mechanical methods. Woody vegetation 6 inches or less will be removed and some herbaceous vegetation will be cut, but not uprooted. Summer roosting sites for Indiana bats tend to be 9 inches or greater diameter at breast height and optimally greater than 20 inches diameter breast height with loose or exfoliating bark. Both gray bats and Indiana bats use open water for foraging. Hibernation of both species occurs outside of the time period of construction of the trail, and human disturbance during these critical periods will be avoided. A temporary tower would be constructed at the site and would be in the riparian area of foraging for the bat species, but bat collisions with towers are rare and would unlikely directly affect bat populations in the area.

Cumulative Impacts: No cumulative effects to threatened, endangered or species of conservation concern are expected as a result of implementing Alternative B. No measurable direct or indirect effects on existing Gray bats or Indiana bat populations from Alternative B would occur since any change in forested habitat would be relatively small. It should be noted that alternative B could positively affect the bat populations by ultimately allowing protection of these species by proper cave gate construction with a resulting increase in populations.

Conclusion: This alternative may affect/not likely to adversely affect threatened, endangered and species of conservation concern.

5.3 Visual Quality

METHODOLOGY

The park encompasses a variety of distinctive natural environments that make up the Ozark Highlands ecosystem. Each of these environments exhibits a unique set of visual characteristics. The same is true for indigenous patterns of habitation and culture unique to the Ozark region. For the purposes of this analysis, park visual resources exist as an integral component of the natural and cultural landscapes which are to be protected and conserved. When an inherently natural setting is altered, the visual quality of that landscape has the potential to be compromised. It follows that human actions in altering the composition of a landscape either temporarily or permanently through development of facilities, removal of vegetation, ground disturbance, or intensive recreational use patterns have the potential to detract from what would otherwise be a naturally occurring scene.

IMPACT THRESHOLDS

- **Negligible:** The naturally occurring visual elements of the riparian environment that comprise the unique scenery which is visible from the river, as well as from the riverbank, is essentially unaltered.

Change to the composition of the scenery is caused by natural occurrences, or if intentional actions are taken, the results are barely noticeable.

- **Minor:** Intentional changes to the visual character of the observed scene are noticeable, though the physical area of noticeable change is spatially finite and confined to a very limited area /or the change is transient within a temporal context (such as a limited period of high visitation).
- **Moderate:** Changes to the visual character of the observed scene are the result of intentional physical alterations to the natural environment of a scope that a visitor will notice marked changes in the visual character within the riparian corridor that are the result of site-specific alterations that disturb or interrupt the over-all experience of the natural setting. However, such changes will be of a degree that a visitor will still have the opportunity to encounter naturally occurring visual elements.
- **Major:** Changes to the visual character of the observed scene are the result of alterations to the physical environment such that these changes will cause a long-term impact to visual quality in the Chilton Creek Area. Though these changes will cause finite points of impact to the natural scene,

ALTERNATIVE A – No action

Analysis: In this alternative there would be no construction or removal of any vegetation therefore there would be no impact on visual quality.

Cumulative Impacts: The plants communities of this area would continue to thrive naturally.

Conclusion: Alternative A (No-Action) no impacts to visual quality in the area.

ALTERNATIVE B – Install a temporary trail from the west boundary of Current River State Park to a point where a temporary tower on the riparian terrace the Current River on the property of The Nature Conservancy would be constructed. This trail would be used by light vehicles for transport of steel to the tower site. Also to construct and install a temporary tower and cable hoist made of steel that would serve as an anchor point for moving materials from the river bottom terrace to the cave gate opening approximately 93 feet above the Current River.

Analysis: In alternative B, a temporary tower and cable hoist could possibly be seen by floaters and hikers in the area. Peak visitor use in this area is typically from June to August. The most common type of visitor use is from the river either from canoes or tubes. The work on this site will occur at the shoulders of the peak seasons. Visitors may see the temporary structures and the work that is being completed, but this work is only temporary and would be gone before peak visitation occurs. The visitors floating the river during time of construction would see the operation of a typical small construction site, with machinery, tools and personnel. Due to the relatively small size of the operation and its short time frame, the visitor impact would be minimal and overall affects of construction should not result in a negative experience.

Cumulative Impacts: Given the scope of the proposed actions in Alternative B, once cave gate building materials have been transported, the temporary tower will be removed. The permanent physical appearance to the scene as experienced by someone traveling along the river will not be affected by further impacts as a result of this action.

Conclusion: Clearing of a trail, construction of a tower and cable and hoist system in Alternative B would cause minor short term adverse impacts to visual quality in the proposed project area.

5.4 Soundscape

METHODOLOGY

As stated in the *Director's Order-47*, natural sounds are intrinsic elements of the environment that are often associated with parks and park purposes. They are inherent components of the "scenery and the natural and historic objects and the wildlife" protected by the NPS Organic Act. Intrusive sounds are of concern to the NPS because they can impede the Service's ability to accomplish its mission. Intrusive sounds may also be a matter of concern to park visitors. Noise has the potential to distract visitors from the resource. In Ozark National Scenic Riverways the ambient sounds associated with the natural setting are an integral component of the resource the park is mandated to preserve. Because visitor use at the park is focused on water related activities (canoeing, tubing, motorboating, fishing, kayaking, rafting) the acoustic environment includes human-generated sounds which can impact the natural ambient sounds along the river during periods of high use (summer weekends). Also as stated in the *Director's Order-47*, sounds made from appropriate recreational activities are acceptable. For the purposes of this analysis impacts to the natural ambient soundscape will reference visitor experiences and existing conditions. Context, time of day, duration and intensity of noise together determine the level of impact for an activity associated with human-generated sound.

IMPACT THRESHOLDS

- **Negligible:** Natural sounds would prevail; activities associated with noise (human-generated sound) would be very infrequent or absent.
- **Minor:** Natural sounds would predominate within the human-generated sounds from appropriate recreational activities can be heard occasionally.
- **Moderate:** Natural sounds would predominate, but activities associated with noise would occur occasionally at low to moderate levels. Human activity associated with noise is consistent with park objectives, noise would predominate during daylight hours during periods of peak use on summer weekends. During mid-week in summer, and other seasons of the year, noise (activity) would not be overly disruptive to noise-sensitive visitor activities and natural sounds could still be heard.
- **Major:** Natural sounds would be impacted by activities associated with noise frequently or for periods of extended time. Where activities associated with human-generated noise are consistent with park objectives, the natural soundscape would be impacted most of the day throughout the week during the summer season. Noise would disrupt conversation for long periods of time, and make enjoyment of other activities in the area difficult.
- **Duration:**
 - Short-Term: Impacts to the natural soundscape occurring during the period of construction.
 - Long-Term: Impacts that affect visitor use patterns and consequently the associated impacts of human generated noise on the natural soundscape for years to come.

ALTERNATIVE A – No action

Analysis: In the No-Action alternative no clearing or construction of any kind would take place.

Cumulative Impacts: This alternative would not add impacts to those that have already occurred or are occurring.

Conclusion: Alternative A (No-Action) would result in negligible impacts to the natural soundscape.

ALTERNATIVE B – Install a temporary trail from the west boundary of Current River State Park to a point on the riparian terrace on the property of The Nature Conservancy where a temporary tower would be constructed. Also to construct and install a temporary steel tower and cable hoist that would serve as an anchor point for a for moving cave gate building materials from the river bottom terrace to the cave gate opening approximately 100 feet above the Current River.

Analysis: In Alternative B human-generated noise caused by heavy equipment in and around the construction area will be noticeable. Because clearing and construction of tower and cable hoist would be scheduled to occur during the shoulder seasons (outside of the busy summer months) the associated audible disturbance would impact the normally predominant natural soundscape that exists at that time of the year. The visitors floating the river during time of operation could hear noises of small wenchers, generators and tractors along with the sounds of a typical small construction crew. The machinery sounds would be intermittent during operation and this noise should not diminish the overall visitors' experience. Work within the adjacent area should only last less than two months. Once work is complete the soundscape will be back to normal with human noise coming from visitors of the park, conditions which currently exist. This activity will not occur during the busy summer months, but will carry into the shoulder seasons.

Cumulative Impacts: This alternative would not add impacts to those that have already occurred or are occurring.

Conclusion: In Alternative B minor short-term adverse impacts will occur to the natural soundscape during clearing and construction of tower and cable and hoist system. Following construction there would no impacts to the existing natural soundscape.

5.5 Soils

METHODOLOGY

Potential impacts were assessed based on extent of disturbance to soils, including natural undisturbed soils, the potential for soil erosion resulting from disturbance, and limitations associated with soils. Analysis of potential impacts to soils was based on the review of existing literature and maps, information provided by government natural resource agencies and professional judgment.

IMPACT THRESHOLDS

- **Negligible:** The action would result in a change to soils, but the change would be so small that is would not be of any measurable or perceptual consequence.
- **Minor:** The action would result in impacts to the soils, but the change would be small and localized and of little consequence.
- **Moderate:** The action could result in a change to soils; the change would be measurable and of consequence. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

- **Major:** The action would result in a noticeable change in soils; the change would be measurable and would result in a severely adverse impact. Mitigation measures necessary to offset adverse impacts would be needed and would be extensive.
- **Duration:**
Short-Term: Impacts to the soil occurring during the period of construction.
Long-Term: Impacts that affect that extend beyond period of construction

ALTERNATIVE A- No action

Analysis: The Alternative A calls for no temporary trail or structures to be placed on the area

Cumulative Impacts: No cumulative impacts on the soil would occur

Conclusion: Under Alternative A, no impacts would occur to the soil, productivity and soil erosion would naturally occur

ALTERNATIVE B- Install a temporary trail from the west boundary of Current River State Park to a point on the riparian terrace on the property of The Nature Conservancy where a temporary tower would be constructed. Also to construct and install a temporary steel tower and cable hoist that would serve as an anchor point for a for moving cave gate building materials from the river bottom terrace to the cave gate opening approximately 100 feet above the Current River.

Analysis: Natural Resources Conservation Services soil surveys show that the area is dominated by two complexes of soil, Relfe-Sandbur in the riparian buffer and Brussels-Gasconade-Rock outcrop complex on the slopes. The Relfe-Sandbur soil complex is a sandy loam that occurs in flood plains. This soil occurs on slopes of ≤ 3 percent with substrates varying from sandy loam to coarser gravel. This is a well drained soil which could erode if left exposed for long periods. The clearing of a temporary trail could affect approximately 12,000 square feet of the plants riparian forest floor exposing some soil which could reduce soil productivity for a temporary period during cave gate construction. Soil erosion would be minimal since vegetation would be cut at the base and root stocks left in place. Minor rutting could occur by vehicles which would expose surface soil, but slopes in the area are less than 3 percent and surrounding vegetation would serves as buffers to trap and hold any surface soil that moves towards the river.

The construction of a temporary tower could affect the soils in one of two ways. The first tower alternative calls for... *construction of a 10 to 20 feet tall steel tower mounted onto a small dozer*. This would only affect approximately 200 square feet of the surface of the soil. Vegetation would not be removed, but would be affected by the dozer tracts. Effects on soil productivity would be short term and soil movement negligible.

The second tower construction alternative calls for....*construction of a 10 to 20 feet tall steel tower secured in the ground which could easily be removed with minimal ground disturbance*. This tower would consist affect approximately less than 10 square feet of the soil surface, but would be anchored in the ground approximately 3 feet. The vegetation underneath the tower would remain and should not affect soil productivity. Soil movement would be minimal and the nearby vegetation should hold any soil during a rain event.

Cumulative Impacts: Due to the lack of size of the project any impacts to the soil would be minor to negligible for the clearing of the trail and both options of tower construction. These effects would be short term and soil productivity would recover in a short period.

Conclusion: Alternative B would not result in any impacts to the soil and subsoil, and would not affect the natural communities of that area.

6.0 CONSULTATION AND COORDINATION

On June 22, 2011 a cave gating grant package was sent from the Missouri Department of Conservation to the U.S. Fish and Wildlife Service. This package included the project proposal, USFWS Region 3, Wildlife and Sport Fish Restoration Division Federal Assistant Document checklist, Region 3 Federal Aid Transmittal Form (Figure 6), Application for Federal Assistance, and a NEPA compliance checklist (Figure 7). On August 4, 2011 an email was sent from Bill Elliot to Lisa Mandell of the USFWS on the acknowledgement that all section 7 (Threatened and Endangered Species) had been adequately covered, this email was confirmed by Lisa Mandell (Figure 8). On August 5, 2011 the Missouri Department of Conservation was notified that the cave gating grant had been accepted and approval for gate construction and temporary trail and could proceed from the USFWS.

On July 27, 2011 James Myster from the USFWS conducted an archeological survey on the trail, hoist area and entrance to the cave. A USFWS report written in August 2011, *Archeological Indendification Survey of the Bat Cave Gating Project in Shannon County, MO*, noted the history of the cave and sited that the temporary trail and hoist system would not affect any cultural resources.

Region 3 Federal Aid Transmittal Form
U.S. Fish and Wildlife Service
Federal Aid
Bishop Henry Whipple Federal Building
One Federal Drive
Fort Snelling, MN 55111-4056

Date Received: (Region 3 FA Date Stamp)			Date Approval Requested by: <u>to start 08/01/2011</u> Date Submitted: <u>06/22/2011</u>	
Grantee: Missouri			Grant No.: S-2-TW-1	
Project Title: Gating Two High Priority Missouri Bat Caves Against Disturbance and White-Nose Syndrome (WNS)				
FWS Biologist: <u>Lisa Mandell</u>			State Contact: <u>Dan Zekor</u> Telephone Number: <u>573/522-4115, x3350</u> e-mail address: <u>Daniel.Zekor@mdc.mo.gov</u>	
Track (circle one): Routine = 15 day Non-Routine = 30 day Non-Routine = 45 day				
Type(s): Grant Segment: Segment Amend: USFWS will complete				
Obligation Intent:	Sub-Account	Federal Share	Circle or Check if Applicable: In-Kind Value Program Income SHPO NEPA (EA letter or EA) Section 7 Other (describe in Note/Special Instructions section below) Needs funding condition (describe in Note/Special Instructions section below) COMPETITIVE (X) or NON-COMPETITIVE ()	
WR Regular	5220	\$		
WR Sect 4 Hunter Ed	5210	\$		
WR Sect 10 Hunter Ed	523_	\$		
WL Cons. & Rest.	551_	\$		
SFR Regular	9514	\$		
SFR Aquatic Ed.	9511	\$		
SFR Boat Access	9521	\$		
Other	1113	\$ 22,240		
Notes/Special Instructions (circle): Biologist Fiscal Land Secretary				
Lisa and Brian: Here is the complete grant application package for the awarded White-nose Syndrome Grants to States (funding opportunity number: WNS-2011-R5). Thanks! Tracy				

O:\grant agreement elimination\updated instructions\Attachment 1, Transmittal form revised.doc

10/2007

Figure 6: Federal Aid Transmittal Form

Preston Mabry

From: Lisa_Mandell@fws.gov
Sent: Thursday, August 04, 2011 12:38 PM
To: Bill Elliott
Cc: Doyle Brown; James_Myster@fws.gov; Norman Murray; Paul_McKenzie@fws.gov; Preston Mabry; Tracy Tomson
Subject: RE: Sec. 7 for Bat Cave/Shannon

Yes, the results of the archeological report need to be described in the EA to close the loop. I sent James a message earlier today asking about the site visit. We'll need to make sure that all is well on the NHPA before we move forward with any activities - and I want to know that is taken care of before the Federal funding is awarded under the grant.

The grant is on my desk awaiting this information.

The Section 7 compliance is complete.

Lisa

Lisa Mandell
Regional Coordinator - Endangered Species Permits/Grants
U.S. Fish and Wildlife Service
Ecological Services
5620 American Blvd. West
Suite 990
Bloomington, Minnesota 55437-1458
612-713-5343 (phone)
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Bill Elliott <Bill.Elliott@mdc.mo.gov>

Bill Elliott
<Bill.Elliott@mdc.mo.gov>

08/04/2011 08:45 AM

To: "Paul_McKenzie@fws.gov" <Paul_McKenzie@fws.gov>

cc: Preston Mabry <pmabry@TNC.ORG>, Tracy Tomson
<Tracy.Tomson@mdc.mo.gov>,
"Lisa_Mandell@fws.gov" <Lisa_Mandell@fws.gov>,
James_Myster@fws.gov" <James_Myster@fws.gov>,
Norman Murray <Norman.Murray@mdc.mo.gov>, Doyle
Brown <Doyle.Brown@mdc.mo.gov>

Subject: RE: Sec. 7 for Bat Cave/Shannon

Paul and all,

Preston Mabry has given his draft EA to Joe Strenfel at the NPS/Ozark National Scenic Riverways to review for the Bat Cave/Shannon cave gate project. With your acknowledgement from FWS that the Sec. 7 aspects have been covered adequately we're hoping that the EA review can be completed soon. I guess that the Sec. 106 archaeology report needs to be mentioned in there too?

Figure 7: Email confirmation from USFWS for Section 7

7.0 REFERENCES

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