



United States
Department of
Agriculture



Forest Service

Mark Twain
National Forest,
Region 9

March 2015

Environmental Assessment

North Fork Access Project

Project Number: 45310
Ava/Cassville/Willow Springs Ranger District
Mark Twain National Forest
Ozark County, Missouri



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ON THE COVER:

Weekend use at North Fork Recreation Area.

Photo by: Wallace Dillon, Forest Soils Scientist

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UNITED STATES DEPARTMENT OF AGRICULTURE

Forest Service

Eastern Region

Mark Twain National Forest

Ava/Cassville/Willow Springs Ranger District

Ozark County, Missouri

NORTH FORK ACCESS PROJECT

ENVIRONMENTAL ASSESSMENT

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Abstract: *This Environmental Assessment (EA) describes the direct, indirect, and cumulative effects for proposed activities in two alternatives for the North Fork Access Project. The purpose of the project is to increase public safety and reduce conflicts among recreationists by separating watercraft and water play activities, while at the same time improving Ozark hellbender habitat and reducing site maintenance costs.*

Alternative 1 – *This alternative would not implement any new management activities or construction in the project area; however, routine maintenance of the existing Forest Service recreation facilities would continue.*

Alternative 2 – *A new hardened watercraft launch site would be constructed to provide for separation of watercraft and water play activities. The hardened launch site would improve Ozark hellbender (a federally endangered species) habitat by reducing sediment inputs to the river. It would also lower maintenance costs associated with ongoing gravel placement to repair damage caused by frequent flooding. The new hardened launch would alleviate most of the maintenance costs associated with the current launch site. It would also improve traffic flow and vehicle parking, and would provide accessibility to persons with disabilities. The improved, hardened access would be more flood resistant, safer, durable, and cost effective to manage.*

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CHAPTER 1: PURPOSE AND NEED FOR ACTION

INTRODUCTION

The Forest Service (USFS) has prepared an Environmental Assessment (EA) for the North Fork Access Project area, located in northeastern Ozark County, Missouri. This EA complies with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. It discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. It also provides supporting information for a determination to prepare either an Environmental Impact Statement or a Finding of No Significant Impact.

Additional documentation, including more detailed analyses of project-area resources, can be found in the project planning record located at the Ava/Cassville/Willow Springs Ranger District Office. It is anticipated that a final decision on this proposed action should be made during May, 2015.

The EA is organized into four chapters:

Chapter 1: Purpose and Need for Action: This chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Chapter 2: Alternatives Considered: This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the interdisciplinary team, the public, and other agencies. Summary tables of the proposed activities for each alternative are provided at the end of each section.

Chapter 3: Environmental Effects: This chapter describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by Physical, Biological and Social Environments; individual resource topics are addressed under each of these headings. Each resource discussion will include short-term uses, long-term productivity, and cumulative effects of each alternative proposed for implementation. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Chapter 4: Consultation and Coordination: This brief section provides a list of preparers and agencies consulted during the development of the environmental assessment.

Appendices: The appendices provide more detailed information to support the analysis presented in the preliminary assessment.

LOCATION, SETTING AND BACKGROUND

Analysis Area Location and Setting:

The project area is located at the North Fork Recreation Area on the Willow Springs Unit of the Mark Twain National Forest. The legal description for the area is T24N, R11W Section 15, Ozark County, Missouri. The project analysis area contains the day use area of the North Fork Recreation Area and the nearby surrounding areas affected by proposed activities. Access to the recreation area is off of Highway CC, approximately 7 miles east of Dora, Missouri and 16 miles west of West Plains, Missouri. The project site is on the east bank of the river, immediately downstream from the CC Highway Bridge.

The North Fork River passes through adjacent federal, state and private lands. Diverse vegetation contributes to the river corridor's high scenic quality. Tree species vary from cedar and sycamore in the lowland sites to

stands of mixed oak, hickory, and pines at upland sites. Understory vegetation such as dogwood and redbud provide for high visual quality during the spring. There are also small openings scattered throughout the corridor that provide visual diversity among the forested borders of hardwood and pine. Vegetation along the North Fork River offers an interesting variety of form, texture, and color with the change of seasons.

Trout fishing (brown and rainbow trout) is another major recreation use on the North Fork River, which has been recognized as one of Missouri's finest trout streams. The portion from Rainbow Springs to Patrick Bridge is managed by the Missouri Department of Conservation as one of the state's "blue ribbon trout streams."

The project area lies within the White River Hills subsection of the Ozark Highlands State Natural Division. Due to its small size, the entire project area is classified as the North Fork River Oak-Pine Woodland/Forest Hills Landtype Association (LTA) (OZ4o). The topography of this LTA is characterized by broad ridges that give way to steep slopes of narrow, sinuous valleys. The valleys are lined with low cliffs and many seep-fed moist cliffs that support rare species. Caves, springs, and losing streams are among the common karst features found in this LTA. Local relief is 200-350 feet. Historically, pine-oak woodland occupied the higher elevations and graded into oak-pine and mixed-oak forest in deep valleys. More recently, the area has converted to second growth oak forest with scattered pine plantings (Nigh & Schroeder 2002).

The dominant soil types in the project area are somewhat excessively drained to well drained Paleudults and Paleudalfs on ridges and side slopes; the moderately well drained Fragiudults on slopes; the somewhat excessively drained, shallow Hapludolls and areas of rock outcrop on steep, dissected landscapes; and the Udifluvents on flood plains and Hapludalfs on terraces in stream valleys. The dominant soil mapping units are the Poynor extremely gravelly silt loam, 8 to 15 percent slopes (28%), Coulstone-Bender-Gatewood complex, 15 to 60 percent slopes, rocky, very stony (1%), Zanoni fine sandy loam, 1 to 3 percent slopes, rarely flooded (1%), and the Sandbur fine sandy loam, 0 to 3 percent slopes, frequently flooded (66%) associations. The total land area within this area of interest (AOI) is approximately 10 acres. Percent values are approximate (Web Soil Survey 2014). A report titled "Custom Soil Resource Report for Ozark County, Missouri, North Fork Access Project" dated December 31, 2014 was generated from this website and is filed in the project record.

The project area is drained by the North Fork River which is part of the North Fork River watershed (Hydrological Unit 11010006) which flows south and empties into Norfork Lake in Ozark County, Missouri. From there, it flows south to the Middle White River watershed (HUC 11010004) downstream into Arkansas. The region is characterized by a well-developed karst terrain with many caves, springs, sinkholes, and gaining and losing streams. During rain storm events or flash floods, the North Fork River flow quickly increases in volume, and the existing gravel load is mobilized and transported downstream. Much of the North Fork Day Use Area is subject to flooding at least every few years. The current launch site is prone to erosion during high water events, potentially contributing to sediment loading in the river.

Background:

North Fork Recreation Area is located entirely on National Forest System lands. A clear definition of who will be utilizing the proposed facilities is a necessary element in successfully meeting the goals and objectives of this project. Based on day use fees collected from 2007 through 2014, use has increased approximately 48%. These figures do not include outfitter/guide use. An outfitter/guide can, on peak weekends, put in 100-150 watercraft. Three main customer groups have been identified. They are:

1. Watercraft users (canoe, kayak, raft, and motorized boats) put in and take out at the site. Users are both commercial and private, with and without trailers.
2. Non-watercraft users include water recreationists who stay in the area for several hours at a time. Activities include swimming/splashing, wading, floating, sitting in lawn chairs, playing games, etc.
3. Picnickers include visitors who eat, take short walks, observe nature and scenery, or relax by utilizing the facilities and associated land in the day use area.

The North Fork River provides a unique recreation experience for the southcentral/southwestern Missouri region. The river supports quality opportunities for a diversity of recreation activities in a relatively undeveloped setting. Popular activities include floating, fishing, hunting, hiking, photography, wildlife observation, scenic viewing, and camping. Floating, primarily by canoe, is the major use of the North Fork River. Much of the appeal for canoeists and kayakers is the fast water and light rapids. Canoeing is extremely popular on weekends during the summer, moderate on weekdays during the summer, and light during the remainder of the year. Many floaters on the North Fork River visit from outside the local area when using local outfitter/guide resources. Recreationists are willing to travel a considerable distance to experience the North Fork River and its scenic surroundings.

FOREST PLAN GOALS, DIRECTION, AND DESIRED CONDITIONS

The Role of the Forest Plan

The 2005 Land and Resource Management Plan (2005 Forest Plan) provides a programmatic framework regarding allocation of land and the measures necessary to protect National Forest resources. It describes how different areas of the MTNF should be managed and what resources should be provided by these lands now and in the future. The Forest Plan Final Environmental Impact Statement (FEIS) displays the forest-wide effects of activities such as timber harvest, wildlife habitat management, recreation management, and visual resource management. Since the site-specific effects of activities planned for this project were not addressed as part of the Forest Plan FEIS, an environmental assessment will be prepared to analyze the site-specific, management activities included in this proposal. A copy of the 2005 Forest Plan can be found at:

<http://www.fs.usda.gov/main/mtnf/landmanagement/planning>

Forest-wide Goals and Objectives

The 2005 Forest Plan establishes goals and objectives for the management of the Mark Twain National Forest. These goals and objectives convey what the desired condition of forest resources will be in the foreseeable future and are the basis for all project-level planning. The standards, guidelines, and management prescriptions contained in the 2005 Forest Plan set parameters which guide the management direction of project-level planning and implementation. Project approval must be consistent with these parameters (16 U.S.C. 1604(i)).

The North Fork Access Project is designed to meet the Forest-wide Goals and Objectives as stated in Chapter 1 of the Forest Plan. Activities in this project would contribute to the social and economic well-being of local communities by providing a variety of uses, values, and products that are within the capabilities of the land. The proposed North Fork Access Project would move resource conditions toward the desired state by meeting the Forest-wide goals and objectives summarized below.

Goals:

Goal 1.2 – Maintain desired ecosystems throughout the forest with few occurrences of non-native invasive species. Prevent new invasions and control or reduce existing occurrences of non-native invasive species.

Goal 1.3 – Minimize erosion and compaction. Restore and maintain soil productivity and nutrient retention capacity. Protect the water quality and integrity of the watershed on Forest lands. Maintain healthy, sustainable, and diverse natural communities. Prevent wetland degradation and loss, and restore and enhance wetlands when possible. Establish and maintain riparian management and watercourse protection zones.

Goal 1.4 – Provide the range of natural habitats necessary to support populations of existing native plant and animal species. Restore and manage natural communities as the primary means of providing quality terrestrial, karst, and aquatic wildlife and rare plant habitat. Provide specialized habitats that are a healthy, functioning part of the larger landscape and require no special protection or additional management considerations. Provide specialized habitat components across the landscape in amounts and types commensurate with the natural

communities in which they occur. Encourage habitat that responds to demand for both consumptive and non-consumptive fish and wildlife use.

Goal 2.1 – Within the capability of sustainable ecosystems, offer multiple benefits that contribute to the social and economic well-being of the local and regional communities by providing a variety of uses, values, products, and services in a cost effective manner for present and future generations. Provide accessibility of the full range of uses, values, products, and services to members of underserved and low-income populations.

Goal 2.3 – Develop and maintain a transportation system which provides the minimum permanent road access needed to meet resource management objectives.

Goal 2.8 – Provide a diversity of recreational opportunities and benefits through a variety of settings. Contribute to local, regional, and national economies by providing recreational opportunities in a socially and environmentally acceptable manner.

Goal 2.9 – Maintain or enhance the quality of scenic resources to provide desired landscape character.

Goal 2.10 – Support preservation of the cultural heritage of Missouri by identifying, protecting, managing and interpreting heritage sites.

Goal 2.11 – Establish management policies that ensure protection of the Wilderness resource while complementing user objectives.

Objectives:

Objective 1.2a – Control existing noxious (*Sericea lespedeza* and Tree of Heaven) or non-native invasive species within the North Fork Day Use Area.

Objective 1.3a – Stabilize the stream bank by hardening the surfaces of the current launch area and strategically planting vegetation along the stream bank.

Objective 1.3c – Increase the loading of large woody downed material in the North Fork River downstream from the current access.

Objective 2.1 – Improve the safety of recreation users through separation of water play and watercraft users of the river.

Forest-wide Standards and Guidelines (S & G)

Standards and guidelines are permissions or limitations that apply to on-the-ground implementation of management practices. Forest-wide standards and guidelines in Chapter 2 of the Forest Plan apply to all management practices for the entire Mark Twain National Forest. Where Forest-wide Standards and Guidelines are different from those for a management prescription, the management prescription standard applies. If a specific resource is not addressed in a management prescription, then only the Forest-wide Standards and Guidelines apply. In addition, federal and state laws, regulations, and the Forest Service directives system always apply even though they may not be cited in the management prescription.

Resource managers that implement projects under this environmental analysis and ultimate decision will refer to the 2005 Forest Plan, Standards and Guidelines to execute legal documents. Management prescriptions provide direction that helps achieve goals and objectives expressed at the forest-wide level. Management prescriptions define where differing types of opportunities and experiences are available to the public, and where differing management practices may be carried out. The North Fork Access Project is managed under Management Prescription 7.1 (MP 7.1). Standards and guidelines for MP 7.1 are found in Chapter 3 of the 2005 Forest Plan as follows:

MP 7.1 Standard and Guideline (Forest Plan, page 3-46) Locate recreational developments by giving priority to correcting health and safety problems, protecting the environment, complementing prescribed recreation

opportunities, and meeting public demand.

MP 7.1 Standard and Guideline (Forest Plan, page 3-46) Provide access control and greater visitor safety by designing developments with a single gated entry/exit road when possible.

MP 7.1 Standard and Guideline (Forest Plan, page 3-46) Restrict public motor vehicle use to designated roads and trails, unless otherwise provided for by law, regulation, or special area management objectives for each area.

MP 7.1 Standard and Guideline (Forest Plan, page 3-46) As much as possible, design sites to be pedestrian oriented, with pathway access from one facility to another as convenient as possible.

MP 7.1 Standard and Guideline (Forest Plan, page 3-47) Design resource management activities to visually blend with the environment.

Management Area Prescriptions

Management prescriptions provide direction to help achieve goals and objectives expressed at the forest level. Management prescriptions define where differing types of opportunities and experiences are available to the public, and where a variety of management practices may be carried out. They identify proposed and probable practices and actions appropriate to achieve the desired conditions. All management prescriptions provide multiple uses, even though their titles may imply a single use.

Management prescriptions are applied to geographical units on the ground, which are called Management Areas. The 2005 Forest Plan assigns management prescriptions to accomplish a desired condition. North Fork Access project area is under Management Prescription 7.1 Developed Recreation Areas. This prescription provides management for developed recreation areas and emphasizes recreation activities such as camping, picnicking, group activities, and other recreation opportunities. It recognizes existing recreation facilities and future needs to provide sites for highly developed recreation intended to serve various user groups.

Management Prescription Goals

Management Prescription goals are concise statements that describe the primary purpose or aim of the management prescription.

The goals for Management Prescription 7.1 are:

- Emphasize recreation activities such as camping, picnicking, group activities, and other recreation opportunities.
- Recognize existing recreation facilities and the future need to provide sites for highly developed recreation intended to serve various user groups.
- Encourage development of interpretation and environmental education opportunities.

Management Prescription Desired Conditions

Desired conditions are characteristics and conditions expected because of the prescribed management. They provide a snapshot of what resources will look like when goals, objectives, standards, and guidelines are met. Desired conditions can apply to the present or future and do not consider cost.

The Forest Plan desired conditions for Management Prescription 7.1 are as follows:

- Recreation areas are to have motorized access and a moderate to high level of developed recreation facilities, and structures that may dominate the landscape. These areas have a substantially modified natural environment. Resources are modified and used primarily to enhance specific recreational activities and to maintain vegetative cover and prevent soil loss. Surrounding areas provide complementary recreation opportunities such as hiking, boating, fishing, and/or trail riding. These

recreation areas are characterized by the “Rural” Recreation Opportunity Spectrum ROS classification. Rural settings have the most developed sites and modified natural setting on the Forest.

- The recreation emphasis continues and the Forest meets public demand for a variety of developed recreation opportunities. Design buildings, materials, and placement of facilities to visually blend with the environment. Developed recreation facilities are safe for visitors and may be accessible to visitors with disabilities in accordance with Section 504 of the Rehabilitation Act of 1973. Areas remain open for use on a regular or year-round basis, as determined by Forest policy.
- Cleaning, mowing, and other needed maintenance is done on a regular and frequent basis. Facilities that are worn or vandalized are replaced or rehabilitated as needed. Maintenance and rehabilitation are prompt and thorough.
- Interpretation emphasizes environmental education, heritage resources and National Forest management.
- Depending upon the site and level of development, a wide variety of quality outdoor recreation activities compatible with the forested environment are available either in the developed area or immediately adjacent.

PURPOSE AND NEED FOR THE PROPOSED ACTION

Purpose and Need

North Fork Recreation Area was identified as a Signature Site through the Mark Twain’s 2007 Recreation Facility Analysis, since it provides a base from which visitors can access the North Fork of the White River, enjoy the two adjacent trailheads, and participate in other dispersed recreation activities. The trailheads access the Ridge Runner Trail, a National Recreation Trail which connects to the North Fork Section of the Ozark Trail, and Blue Spring Trail which connects to the Devil’s Backbone Wilderness and its trail system. The Devil’s Backbone Wilderness encompasses 6,687 acres with approximately 13 miles of trails, and is dissected by the North Fork of the White River. The North Fork Recreation Area consists of a campground with 20 sites (2 electric, 18 non electric) in 3 separate loops, water hydrants, trash receptacles, and two vault toilets; and the day use area that consists of a river access/water play area, picnic sites containing picnic tables and pedestal grills, one vault toilet, a hydrant, and trash receptacle. The proposed management activities at the river access/water play area are needed to increase public safety and reduce conflicts among recreationists by separating watercraft and water play activities, while at the same time improving Ozark hellbender habitat and reducing site maintenance costs.

The goals of this project are as follows:

- update the day use river access design and features to improve access to the river for watercraft users and commercial outfitters.
- separate watercraft users from the picnic area and separate watercraft users towing trailers from on-site day use and water play users.
- anticipate parking and turn-around spaces needed for the numbers and types of vehicles using the area.

This would enhance safety and reduce visitor conflicts, thereby improving visitor satisfaction. The current launch site and adjacent stream banks are prone to erosion during high water events, contributing to increased gravel/sediment loading in the river affecting downstream conditions. The project would reduce impacts on the aquatic environment by reducing sediment inputs into the river.

Existing Conditions

This area has reportedly been used for recreation and river access for almost a century prior to the Forest Service having ownership. North Fork Recreation Area has been popular for camping, picnicking, and river

access since it was constructed in the early 1960's. Since the 1960's, the river access has been reconstructed or replaced at least 2 or 3 times and the large asphalt parking lot has been replaced by a smaller, less formal, gravel surfaced parking lot as a response to repeated and frequent flood damage to the facilities. It is showing its age and inability to adequately withstand current use and demand by the public and outfitters. This project is not promoting increase in use of area, rather it allows for better management and protection of resources that are already in place. Current facilities offer inadequate traffic flow and parking, lead to conflict between user groups, are prone to increasing deferred maintenance, have limited ability to withstand flooding, and contribute to sedimentation into the river.

The current river access area is being used for launching and retrieving float craft by commercial and non-commercial floaters and some boaters, and is also used for on-site relaxation, wading, and water play by non-float craft users. Traffic flow and vehicle parking have been problematic due to the road and parking area size and designs. The area becomes very congested and unsafe during periods of launching and takeout by float craft. It is very common to see buses and trucks backing trailers into the river while sunbathers and waders mingle in the same location of the river.

An example of typical use is three outfitters (buses pulling trailers) to be present at one time on an average weekend day. There are typically 20-24 canoes or other watercraft and people at one time at the water's edge involved in the process of putting in or taking out. The use is 90% put in vs. 10% take out at this location. There are two Missouri Department of Conservation (MDC) public accesses along the river 10-14 miles downstream and other private areas further downstream where the majority of watercraft users take out. Out of the 7 currently permitted outfitters, only 2 are located upstream. In addition, there can be up to 100 persons engaged in picnicking, fishing and water play, including people sitting in the water in lawn chairs with their backs to vehicular traffic. These conditions often make it congested and unsafe during periods of watercraft launching and take out.

Additionally, this recreation site is impacting an altered stream channel and associated aquatic habitat. Erosion of the current boat launch site and adjacent stream banks contributes to altering stream morphology and is a source of sedimentation into the river during flood events.

Desired Conditions

This project would improve the safety for day use visitors, improve vehicle traffic flow, and address problems associated with insufficient, poorly designed parking areas. The desired condition for this project is to divide the day use area into 2 separate river access sites. One access site would provide access for commercial and private watercraft users (canoe, kayak, raft, and motorized boats) and would accommodate watercraft transported by trailer. Motorized boat use would not be prohibited, but this is not the primary use intended at this site. A second, separate access would accommodate water play recreationists who stay in the area for several hours at a time (swim, splash, get wet, wade, sit in the water in lawn chairs, utilize air mattresses, play games in the water, etc.). This separate access would also be available as an access site for watercraft users carrying their watercraft. A walkway leading to this site would be constructed to comply with Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG).

The project would maintain and protect river system values including recreation and scenery, free-flowing character, and water quality. The project would meet multiple objectives, including those that:

- Provide opportunities for river access and opportunities for enjoyment of public lands in the river corridor by providing a watercraft river access and a fishing and water play area.
- Protect habitat for the Ozark hellbender by reducing sediment inputs into the river.
- Conserve habitat for both aquatic and terrestrial species inhabiting the North Fork River corridor.
- Improve stream morphology and water quality.

- Reduce conflicts and facilitate site management and control through a well-designed river access.
- Reduce deferred maintenance backlog and annual operation and maintenance costs.
- Develop a management strategy that is reasonable, cost-effective and can be implemented.
- Encourage resource stewardship, courtesy, and recreation safety through quality site design and effective conservation messages, including those providing education and awareness of wilderness values, regulations and management.

Summary of Project Proposal

This project involves only the day use portion of the North Fork Recreation Area – it does not propose any changes to the campground/overnight facilities or the trailheads located near the campground. It will address the need to rehabilitate and reconfigure the North Fork Day Use Area and River Access, which currently consists of picnic areas, parking, water hydrant, double vault toilet and a combined public and outfitter gravel-surfaced river access/bloat launch and water play area.

The project focuses on increasing safety and reducing conflicts between recreationists by separating watercraft and water play users that come to enjoy the river. It would also improve habitat for the Ozark hellbender (a federally endangered species) by reducing sediment inputs into the river and would lower maintenance costs associated with flood repair by reducing the gravel surfacing required by the current design. Constructing a new river access would improve traffic flow and vehicle parking for safety and would provide accessibility to persons with disabilities. The new hardened access would reduce sediment inputs into the river, thus reducing the potential for negative effects on hellbender habitat. An improved, hardened access would be more flood resistant, safer, durable, and cost effective to manage. Accumulated deferred maintenance would be eliminated. The project proposal includes the following:

- Widen the entrance road from CC Highway.
- Reconfigure the existing access.
- Create a hardened access up river and closer to CC Highway from the existing access with a one way driving loop; provide a ramp for watercraft to launch from, and provide watercraft trailer/vehicle parking.
- Place large wood structures in and/or along the river corridor to correct stream conditions and to store gravel and sediment. Structures would also improve Ozark hellbender habitat and reduce gravel build up by storing it on bars. Structures would be placed in the stream, along stream banks, and on gravel bars.
- Create a floodplain overflow channel to reduce erosion of the current launch site. The overflow channel would be armored with rocks and plantings along banks. Large wood structures would be placed to protect the area between the river and overflow channel.
- Reconstruct the stream bank in the area of the current boat launch upstream from the location of the overflow flood channel.
- Install necessary signage, bulletin boards and replace/relocate water hydrant to accessible locations.
- Use vegetation plantings and other methods for stabilizing and rehabilitating portions of the gravel bar within and adjacent to the existing access.

DECISION FRAMEWORK

The District Ranger of the Ava/Cassville/Willow Springs District is the responsible official for selecting an alternative for the North Fork Access Project. Based on the environmental analysis, Forest Plan direction, and

results of public involvement, the Deciding Official must decide whether to proceed with a specific action. If the action alternative is selected, the decision may include mitigation measures in addition to the 2005 Forest Plan Standard and Guidelines.

The decision for this project is not one of land allocation, nor is the analysis intended to look at every combination of activities. The scope of the decision would be confined to a reasonable range of alternatives that would meet the project's purpose and need. This proposed project is subject to a pre-decisional administrative review (objections) process described in 36 CFR 218, subparts A and B.

PUBLIC INVOLVEMENT

Letters of notification announcing the availability of the project proposal for 30-day comment were mailed on October 22, 2014 to interested and affected parties, including local outfitter and guides, to invite comment on the proposed action. The scoping and 30-day comment periods required by 36 CFR 218 ran concurrently since the nature of this project is low in complexity, is conducted routinely, and the environmental effects are highly predictable. A legal notice advertising the availability of the project proposal and comment package was published in the Springfield News-Leader on October 24, 2014, notifying the public of the opportunity to comment on the North Fork Access Project. Project documents, including the Public Comment Package, have been posted on the Mark Twain National Forest web-site since October 2014 and the project is listed on the Forest-wide Schedule of Proposed Actions (SOPA).

The District received fourteen responses to the public comment package. All comments received were reviewed by the District Ranger and the Interdisciplinary Team (IDT). A primary concern of many of the respondents was that the proposed watercraft launch area would not be large enough and would contribute to congestion in the area. Some of the commenters were also concerned that the cost of the project would be excessive. In order to better define some of these concerns, a meeting was held on December 18, 2014 with local outfitter/guides to discuss issues brought forward during the 30-day comment period. The district Ranger, IDT members, a Forest Service regional watershed restoration geologist, and a U.S. Fish & Wildlife Service biologist were present to address concerns and answer questions. Responses to comments received are located in the project record and also are provided in Appendix E of this document.

The IDT developed the issues and alternatives analyzed in the Environmental Assessment (EA) based on comments received during the 30-day comment period, internal and external issues brought forward during scoping, and input received from outfitter/guides at the December 18th meeting. No new issues were identified and no new alternatives were developed as a result of this process. Minor modifications to the proposed action that resulted from comment analysis are discussed in Chapter 2 of the document. This EA has been prepared as permitted by our regulations for notice, comment and appeal (36 CFR 218).

ISSUES

In accordance with laws and regulations, factors such as vegetation, wildlife, threatened and endangered species, water and air quality, and cultural resources will be addressed in the analysis. The Deciding Official and the IDT identified project issues and separated them into two groups: key issues and non-key issues. Key issues were identified as those directly or indirectly caused by implementing the proposed action. Non-key issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision being made; or 4) conjectural and not supported by scientific or factual evidence. The Deciding Official reviewed and concurred with the key and non-key issues. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..."

Key issues create a foundation for the EA, both in terms of alternative development and for analyzing environmental effects. The purpose of soliciting comments is to determine where there are any unresolved issues that affect a resource, the proposed action or another alternative. Issues and concerns originating from public comments and internal agency concerns are identified for analysis. After reviewing the comments from the public, other agencies, and organizations, the interdisciplinary team identified three key issues which are listed below and addressed in Chapter 3. Based on public input and specialist input, this project does not present any highly controversial issues.

- **Issue 1: Location, safety, and sustainability of the river accesses into the North Fork River within the North Fork Recreation Area:** During summer months, congestion is becoming a safety concern for users engaged in launching watercraft and those recreating in the North Fork River at the existing boat launch.
- **Issue 2: Protection of the Ozark Hellbender:** The Ozark hellbender is listed on the Endangered Species List by U.S. Fish and Wildlife Service (October 2011). The North Fork River is habitat for the Ozark hellbender.
- **Issue 3: Protection of the North Fork River:** The day use area within the North Fork Recreation Area is located along the North Fork River, a water protection zone (WPZ). The area is prone to flooding. According to the 2005 Mark Twain Forest Plan, where no other suitable locations are available, a recreation facility should be low-cost or flood resistant in order to endure occasional flooding.

CHAPTER 2: ALTERNATIVES CONSIDERED

INTRODUCTION

This chapter describes and compares alternatives for the North Fork Access Project Environmental Assessment. It includes a description of each alternative to be considered by the Responsible Official in making a decision. This chapter also presents the alternatives in comparative form, defining the difference between each alternative and providing a clear basis for choice among options by the decision-maker and the public. The comparison is based on the objectives identified in Chapter 1.

FORMULATION OF ALTERNATIVES

The Interdisciplinary Team analyzed both internal and external comments received during the public comment period. Alternatives were developed to respond to unresolved issues as related to the purpose and need for this project, including laws, regulations, and policies that govern land use on National Forest System (NFS) lands. Alternatives, both those considered in detail and those eliminated from further study, display a range of options which could be used to implement the North Fork Access Project. Management needs and opportunities, as determined by site-specific investigations, were also considered in this process.

Viable alternatives, such as Alternative 2, must meet the Purpose and Need for the project and address any key issues. A “No Action” alternative (Alternative 1) must also be included as one of the alternatives. No additional alternatives or key issues were brought forward during the 30-day comment period or from the IDT’s subsequent analysis of public comments and project issues.

DESCRIPTIONS OF ALTERNATIVES CONSIDERED IN DETAIL

The following is a description of alternatives analyzed in detail by the Interdisciplinary Team. All changes would be evaluated to ensure that any effects are within the parameters of effects analyzed in this document and would be documented in the North Fork Access Project administrative record. Pertinent Forest Plan Standards and Guidelines designed to mitigate effects of implementing each alternative are listed in the Forest Plan Goals, Direction, and Desired Conditions section (pp. 4-8) of this document. Maps depicting activities that would be implemented under the action alternative are presented in Appendix C of this document.

THE PROPOSED ACTION AND PRELIMINARY ALTERNATIVES

This section provides a detailed description of the alternative methods for achieving the project’s purpose and need. The alternatives were developed based on issues raised by the IDT, the public and other agencies.

Alternative 1

The North Fork Day Use Area would remain in its current condition. This alternative provides a baseline or reference point against which to describe environmental effects of the action alternative. It would not offer solutions to address the purpose and need for this project.

If Alternative 1 is selected, no new federal management activities would be initiated. Routine maintenance of the existing Forest Service recreation facilities would continue as funding allows. Changes might occur through natural processes or future management direction. Selection of this alternative would not foreclose the option for future management in this area.

Some consequences of selecting this alternative would include: 1) public safety would not be improved; 2) traffic congestion and conflicts between users of the area likely would increase; and 3) the potential for sediment loading of the river would continue.

Table 2.1. Summary of proposed activities for Alternative 1.

Activity	Location	Effect on project area
No new boat ramp construction	Upstream of existing launch site and just below the Highway CC Bridge	All Forest Service lands within this area would remain in their current condition. No new construction would occur and no floodplain restoration and stabilization would happen. The riverbank and floodplain in this area would continue to decline over time due to seasonal flooding and ongoing erosion.
No redesign of existing river access	Existing river access and water play area	No rehabilitation of the river access or the water play area would occur. No new construction would occur. Existing facilities, roads and parking areas would remain in the current condition. It is likely that future repairs and reconstruction of the river access would not be permitted after flooding events. Hand carrying and launching of watercraft from the parking area likely would be allowed to continue.
No connected actions would occur	Forest Service system roads and North Fork River corridor	The road system in the project area would remain unchanged. Hydrological modifications to improve gravel and sediment storage and reduce stream bank erosion would not occur.

Alternative 2

This section provides a detailed description of the action alternative. The purpose of this action is to provide a new watercraft access area upstream and on same side of the river as the existing access. This project is needed to address potential conflicts between water play users and watercraft users, traffic congestion, and sediment loading in the area. This alternative addresses forest-wide goals and objectives, and adheres to the standards and guidelines established in the 2005 Forest Plan.

In brief, a new boat ramp would be constructed upstream to replace the existing access which would be closed to vehicular traffic. Backing vehicles and trailers to launch and retrieve watercraft would no longer be permitted at the current site. This would be accomplished by pacing a moveable barrier/gate that would allow access to the area only during emergencies. The area would remain open to water play users. It would also remain open to those who are willing to launch and retrieve watercraft by hand and transport them between the river's edge and the parking area.

Construction of New Boat Ramp: A new watercraft launch and retrieve ramp would be constructed upstream and just below the Highway CC Bridge on the same side of the river. The new boat ramp would be 40 feet wide with a walking and transport path that is 10 feet wide built alongside. A one-way loop road approximately 0.25 mile long would be constructed to provide both commercial and private vehicle access to the new boat ramp. A parking area would be constructed for buses, vehicles with trailers, and single vehicles. Aesthetically pleasing barriers and vegetative plantings would be incorporated to separate launch and parking areas and discourage the creation of a network of foot paths between parking areas and the river. A riparian buffer would be established along the riverbank using floodplain plants and wood. A gated access (24 feet wide) would be installed to control vehicle traffic from Forest Road (FR) 805 to the traffic loop, parking area, and boat ramp.

Redesign of Existing River Access: The existing river access would be rehabilitated and redesigned to create a hardened water play area without chat and gravel. The stream bank in this area would be reconstructed and stabilized. The existing parking area would be reconfigured and enlarged to accommodate parking for six to eight additional vehicles. A barrier would be installed to prevent vehicles from driving to the river's edge, parking next to the river, or launching watercraft from vehicles at that site. Hand carrying and launching of watercraft at the site would still be allowed. A pedestrian walkway would be constructed to provide access to the river from the parking area. The walkway would meet Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG). Barriers and vegetative plantings would be established to prevent establishment of user-created paths to the river. The intention is to maintain and encourage growth of ground-covering vegetation in the flood zone along the river. Minimization of bare ground in the area will discourage soil transport and sedimentation processes.

Connected Actions: Several additional actions would be connected to the new construction and redesign activities discussed above. The entrance to the area on FR 805 from Highway CC would be increased to 24 feet wide in order to accommodate two-way traffic. Large wood structures (approximately 6 total, 4 as mitigation) would be placed along the river corridor to modify stream conditions and store gravel and sediment. These structures would improve Ozark hellbender habitat by storing gravel on bars; thereby reducing gravel accumulation in the streambed. A floodplain overflow channel would be constructed immediately downstream of the current launch site (i.e. the water play area) to reduce ongoing bank erosion. The overflow channel would be armored with rocks and plantings along the banks. Existing gravel bars would be stabilized by vegetative plantings and other means. Necessary signage and bulletin boards would be installed, and water hydrants would be replaced and/or relocated to accessible locations.

Table 2.2. Summary of proposed activities for Alternative 2.

Construct New Boat Ramp	Measures (Estimated)
Watercraft launch and retrieve ramp	40 feet wide
Walking path	10 feet wide
Vehicle access to new boat ramp with traffic loop	0.25 miles
Gated access from FR 805	24 feet wide
New parking area for vehicles with trailers	4 pull-through and 5 back-up
Vegetative plantings and barriers	As needed
Redesign Existing River Access	Measures (Estimated)
Reconstruct stream bank, beach area, and water play area	80 x 40 feet
Enlarge existing parking area	6-8 additional vehicles
Barrier to prevent motorized vehicle access to river	1 gate/fence section
Construct a pedestrian walkway (FSORAG compliant)	up to 15 feet wide
Vegetative plantings and barriers	as needed

Connected Actions	Measures (Estimated)
Widen entrance from Highway CC to FR 805	24 feet
Placement of large wood structures	approximately 6 structures
Construct an engineered floodplain overflow channel	approximately 500 feet
Gravel bar stabilization	as needed

Design Considerations:

1. The design should provide simple, safe, and low maintenance facilities that are functional, economical, and visually appropriate for the Forest Service and the surrounding community.
2. Provide facilities that would increase safety and reduce visitor conflicts by separating watercraft and water play activities.
3. Visibility and safe access from main entry roads should be carefully considered in the site development and design for efficient customer service.
4. The design should maintain and enhance the character of the site. It should include naturally-appearing materials to maintain the current aesthetics of the area.
5. Low Impact Design (LID) principles would be applied to development of the project area under consideration. LID ensures that the diversity, stability, and resilience of natural ecosystems remain intact.
6. The design should be flood resistant.

A design narrative titled “North Fork Recreation Area, River Access Rehabilitation Project Design Narrative” was developed to provide consolidated information, intent, and philosophical direction for use by project planners and designers in project implementation. The design narrative is available from the project record.

ALTERNATIVES NOT CONSIDERED IN DETAIL

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments and agency concerns may provide suggestions for alternative methods for achieving the purpose and need for the proposal. Some of these alternative methods are often duplicative of the proposal; are actions that need to be addressed at a higher level within the organization, and therefore are beyond the scope of this analysis; would not accomplish the purpose and need for the project as well as the proposal; or are technically unfeasible. One alternative that was considered, but dismissed from detailed consideration is summarized below.

Alternative that would have provided a new access on the opposite side of the river from the existing access

An alternative was considered that would have provided a new access on the opposite side of the river from the existing access. This alternative was dropped from further consideration due to concerns related to user safety, site limitations on potential uses, and management considerations as follows:

- The launch access at this site would be located at the head of a riffle. This would force users to launch watercraft in relatively swift water, especially during moderate and high flow stages.

- The terrain would not be conducive to constructing a boat launch that would allow launching of watercraft from a trailer into the river. Users would have to carry watercraft down to the launch site.
- Management of the area would be complicated by having use areas on opposite sides of the river.
- Forest Plan guidance for this area across the river directs that it be managed as a non-motorized area. Development of a river access in this area would require an amendment to the Forest Plan.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

INTRODUCTION

This chapter summarizes the physical, biological, and social environments of the affected project area and the cause and effect relationship of implementing each alternative on that environment. It also presents the scientific and analytical basis for comparison of alternatives presented in the previous tables. Resource specialists analyzed the magnitude of direct, indirect, and cumulative effects of the proposed activities on both short and long-term productivity. Only information necessary to understand the environmental consequences was included in this document. The project record contains all project-specific information, including specialist reports and results of public participation. The project record is located at the Ava/Cassville/Willow Springs Ranger District Office. Information from the record is available upon request.

The following are definitions of terms used in discussing the environmental effects of proposed activities:

Affected environment (40 CFR 1502.15) is a brief description of the area(s) to be affected by the proposed activities. The description shall be no longer than necessary to understand the effects of the alternatives.

Direct effects (40 CFR 1508.8) are those occurring at the same time and place as the triggering action (e.g. soils erosion during construction on site).

Indirect effects (40 CFR 1508.8) are those caused by the action, but occur later, or at a distance from the triggering action (e.g. soils erosion leads to sedimentation of the river which can cause adverse health effects to aquatic predators downstream of the site).

Cumulative effects (40 CFR 1508.7) are the effects on the environment that result from incremental effect of the action added to the effects of other past, present, and reasonably foreseeable future actions, regardless of whether or not the agency or other entity undertakes them and regardless of land ownership on which other actions occur. An individual action, when considered alone, may not have a significant effect, but when its effects are considered in addition to effects of other past, present, and reasonably foreseeable future actions, the effects may be significant (e.g. sedimentation occurring from this project in addition to sedimentation from other projects occurring in the same watershed would be cumulative). The cumulative effects analysis for each alternative is evaluated separately for each resource and may have different spatial and temporal boundaries. Agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effects of all past actions combined. The analysis of cumulative effects begins with consideration of the direct and indirect effects on the environment that are expected or likely to result from the alternative proposals for agency action. Agencies then look for present effects of past actions that are, in the judgment of the agency, relevant and useful because they have a significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives.

The USDA-Forest Service uses the most reliable and timely data available. Accuracy from the Geographic Information Systems (GIS), Natural Resource Information System (NRIS), Forest Inventory and Analysis Database (FIADB), Infrastructures Database (INFRA), Forest Service Activity Tracking System (FACTS), Missouri Fish and Wildlife Information System (MOFWIS), and other databases vary in accuracy. All attempts to verify and update this information have been made where possible.

SOILS

Affected Environment/Existing Conditions

The project area lies within the White River Hills subsection of the Ozark Highlands State Natural Division. The area is classified as the North Fork River Oak-Pine Woodland/Forest Hills Landtype Association (LTA) (OZ4o). Pre-settlement vegetation was dominated by extensive dolomite glade and woodland complexes, oak woodland, and oak-pine woodland forests. Dense second-growth forests and cedar thickets on former glades dominate the landscape today (Nigh & Schroeder 2002). The dominant soil types in the project area are somewhat excessively drained to well drained Udifluvents and Paleudalfs on floodplains and stream terraces. The dominant soil mapping units of the site are [SANDBUR](#) (66%) and [POYNOR](#) (28%).

Management Considerations. Management considerations describe soil characteristics that may be affected by implementation of Alternative 2, the Proposed Action. The primary management consideration for soils in the project area is erosion resulting from the removal of riparian vegetation, and increased overland flow from additional roads, walkways, and parking areas. Secondary considerations are rutting and compaction caused by construction equipment and passenger vehicles leaving hardened areas.

The use of heavy equipment required to develop and maintain travel way and parking areas may cause soil disturbances that could reduce the productivity of forest soils. The resulting soil disturbances could contribute to reduced water infiltration rates and increased runoff and sediment delivery to the North Fork River. Soil disturbances resulting from this project could be limited by using the appropriate equipment, avoiding operations during wet periods, and by restricting traffic to hardened areas. When disturbances occur, their potentially negative effects could be reduced by remedial actions such as tillage, the re-establishment of drainage patterns, and or implementing erosion control.

A brief listing of potential soil issues and concerns associated with timber removal include the following:

Compaction: The immediate (direct) effects of heavy equipment on soil properties are:

- a) increased soil resistance to penetration
- b) reduced conductivity of soil to water and gas flow through a reduction in the size, continuity, and total volume of pores, especially large pores
- c) reduced number, size, and/or strength of structural aggregates

Ground Cover: A lack of adequate effective ground cover usually results in accelerated surface erosion. Effective ground cover can include low growing vegetation including lichens and mosses, and rock, litter, and duff. The amount of effective ground cover needed to prevent erosion varies by local climate, slope and soil texture.

Soils. The Soil Survey of Ozark County was reviewed and considered during this soil analysis. The survey describes numerous soil characteristics that are relevant to the North Fork Access Project. The ground cover in the project area is primarily riparian vegetation, such as grass, leaves, and coarse wood. Table 3.1 provides information on the major soil mapping units in the project area.

Table 3.1. Project area soils.

Map Symbol	Soil Name
73220	POYNOR EXTREMELY GRAVELLY SILTLOAM, 8-15% SLOPES
73230	COULSTONE-BENDER-GATEWOOD COMPLEX, 15-60% SLOPES, ROCKY, VERY STONY
74658	ZANONI FINE SANDY LOAM, 1-3% SLOPES, RARELY FLOODED
75424	SANDBUR FINE SANDY LOAM, 0-3% SLOPES, FREQUENTLY FLOODED

The project area is relatively flat, although some slopes may reach 20%. Erosion risk is slight for the entire site, while rutting risk is moderate on Sandbur soils. Permeability is moderately rapid, due to soil texture.

The soils in most of the project area are flat, stable and have adequate ground cover; disturbance to these areas can be attributed to moderate foot traffic and wildlife. Two sites have been identified as being detrimentally disturbed; the disturbance is caused by visitors accessing the river from steep riverbanks. Bare soil on the riverbanks is then eroded into the river during storm and flood events.

Direct and Indirect Effects on Soils

Alternatives 1 and 2 were evaluated to determine if implementation would result in any detrimental effects to the soil resource. Potential concerns associated with proposed activities include: impacts due to erosion, compaction, and nutrient removal from the soil.

General Effects of Soil Disturbance

Because soil is eroded off the surface horizon, erosion results in a loss of nutrients for forest productivity (Pritchett & Fisher 1987). It also results in a loss of biodiversity of thousands of species of soil microorganisms, which are lost where soil erosion takes place (Pierzynski, Sims, & Vance 2000; Roesch et. al. 2007). In addition, erosion can result in a loss of carbon sequestered in the surface horizon (Boyle 2002).

In addition to erosion, most soils on the Mark Twain National Forest are generally susceptible to compaction, puddling, and displacement.

The extent to which a soil is susceptible to compaction and puddling are dependent on soil texture, soil structure, soil moisture, ground cover, and activity type. Generally speaking, wet or moist soils with loamy or clay textures and weak structure are inherently more susceptible to compaction and puddling, regardless of ground cover or type of activity.

Alternative 1

Under Alternative 1, no new management activities would take place, nor any activities associated with Alternative 2. Therefore, no appreciable management-related changes in productivity of the land would occur. Resource management activities by the Forest Service approved under other project decisions or management authorities would be implemented. There would be no impacts to the soil resource from the North Fork Project management activities since none would be implemented.

Some consequences of selecting this alternative would include: 1) sediment production from the existing boat launch would continue and 2) stream banks would continue to erode during flood events.

Alternative 2

Under Alternative 2, the Proposed Action, three proposed resource management activities have the greatest potential to affect the soil resource: 1) construction of the 0.25 mile loop road; 2) construction of boat launch, and 3) parking area construction.

Road Construction and Widening

A 0.25 mile, one-way loop road would be constructed to access the new boat launch and parking area. The existing entrance road from CC Highway would be widened from 22 feet to 24 feet to accommodate two-way traffic.

Heavy equipment would be used to accomplish this work and short periods of exposed soil and soil erosion is anticipated. Soil erosion should return to natural levels of 0.017 tons/acre/year once work is completed and vegetation is established (Elliot et al. 2010). The additional road would result in a permanent loss of soil productivity over the defined area. The site would be removed from biomass production and re-dedicated for an

administrative use. The area would be compacted by vehicular traffic and have increased runoff and erosion potential.

Boat Launch Construction

Construction of a 40 foot x 100 foot concrete boat launch with adjacent 10 foot walkway is proposed. The site would be permanently removed from biomass production and re-dedicated for administrative use.

Parking Area Construction

A new parking area, approximately 1.60 acres in size would be constructed to accommodate buses with trailers and single vehicles. Also, 6-8 parking spaces would be added to the existing parking area. Work on the new section of parking would be accomplished and have the same effects as those anticipated for the road construction and widening.

Cumulative Effects on Soils

Cumulative Effects Area (CEA)

Spatial boundary

The spatial boundary used to evaluate soil effects is the activity area within the project area boundary because this is the area that would be directly impacted by the proposed alternatives.

Temporal boundary

The temporal boundary of analysis considers soil development through geologic time with the historic effects to soils created by humans and other impacts that have affected the soil resource.

Cumulative Effects of Alternative 1

Under Alternative 1, no new management activities would take place; therefore, no appreciable management-related changes to the land would occur. Soils would continue to be impacted by use of the Forest System access road, parking areas, day use areas, and the existing boat launch. Erosion and sediment production from the existing launch site and the recreation day use area would remain the same or increase over time with continued use. Sediment delivery to the river would remain the same or increase, potentially impacting water quality.

Cumulative Effects of Alternative 2

Under Alternative 2, past measurable detrimental impacts to soil and water, primarily associated with eroded stream banks and would still exist on the landscape. Compacted or eroded areas would remain and recovery of these areas would continue at current rates. Some additional direct soil impacts, such as compaction or removal of protective ground cover, would result from the proposed construction. Conversely, restoration actions, associated with Alternative 2 would occur, thereby enhancing watershed hydrologic function, stabilizing degraded stream banks, and accelerating natural recovery. Foreseeable future effects may result from continued stream bank trampling by visitors. However, the effects could be mitigated through the use of vegetative plantings to deter user created accesses.

Alternative 2, the Proposed Action, has the potential to affect soil resources as a result of activities associated with road, trail, boat ramp, and parking lot construction. The effects of these activities on soil resources in the project area can be described by short and long-term effects on soil productivity. Short-term effects are those lasting 3 years or less, and are associated with a recovery period in which disturbed areas re-vegetate. Short-term effects imply that the existing soil profile is left essentially intact. Surface disturbances, such as shallow compaction and removal of vegetation are potential short-term impacts.

In contrast, long-term effects are associated with activities which displace the upper portions of the soil profile (topsoil). Many years are needed for the soil to recover its original productivity when surface layers are removed.

Estimated acres impacted by the proposed activities are listed in Table 3.2. Estimates are classified as related to potential short-term or long-term impacts to soil productivity. Total impacted acres would be in addition to those affected by current and past use in the North Fork Access Project area.

Table 3.2. Estimated acres impacted by Alternative 2.

Project Activity	Short-Term Effects	Long-Term Effects	Total
Road Construction: 0.25 miles	0 acres	0.66 acres	0.66 acres
Entrance Road Widening: 400 feet	0 acres	0.01 acres	0.01 acres
Sidewalk Construction: 0.19 acres	0 acres	0.19 acres	0.19 acres
Boat Launch Construction: 0.009 acres	0 acres	0.09 acres	0.09 acres
Rehabilitate Existing Access	0.25 acres	0 acres	0.25 acres
Parking Area Construction: 1.60 acres	0 acres	1.60 acres	1.60 acres
TOTALS	0.25 acres	2.54 acres	2.79 acres

****Assumptions used for the table above:**

1. New one-way road has 18 feet of travel way and 4 feet of cleared right-of-way.
2. All walkways are 15 feet wide.

Under Alternative 2, the amount of land and soils impacted would not be significant. To put the magnitude of land and soil impacts into perspective, the North Fork Project Area is approximately 10 acres. Short-term effects are limited to an estimated 0.25 acres, or 2.5% of the project area. Long-term effects may occur on an estimated 2.54 acres, or 25.4% of the project area. A total of 2.79 acres or 27.9% of the project area is expected to receive some form of soil disturbance.

Irreversible or Irretrievable Commitment on Soils Resources

Irreversible effects are expected to occur on sites where parking areas, walkways, and roads are constructed; they may also occur if user created river accesses remain in use.

Summary of Effects on Soils Resources

Implementing the activities proposed in the North Fork Access Project would allow the Mark Twain National Forest to address a public safety issue, as well as rehabilitate chronic sediment source. Based on review of existing field conditions and the project proposal, activities proposed in this project combined with existing

activities are unlikely to produce sufficient long-term impacts to the soil resource to move the North Fork Access Project area into a detrimentally disturbed condition.

HYDROLOGY

Background

The purpose of the North Fork Access Project is to (a) update the day use river design and features to improve access to the river for watercraft users and commercial outfitters; (b) separate watercraft uses from the picnic area and separate watercraft users towing trailers from the on-site day use and water play area; and (c) accommodate the parking and turn-around space needed for the number and types of vehicles currently being used. This project is needed to enhance safety and reduce visitor conflicts, thereby improving visitor satisfaction. Additionally, the current launch site and adjacent stream banks are prone to erosion during high water events, contributing to increased gravel/sediment loading in the river affecting downstream conditions. The project would improve water quality and reduce impacts on the aquatic habitat by reducing sediment inputs into the river.

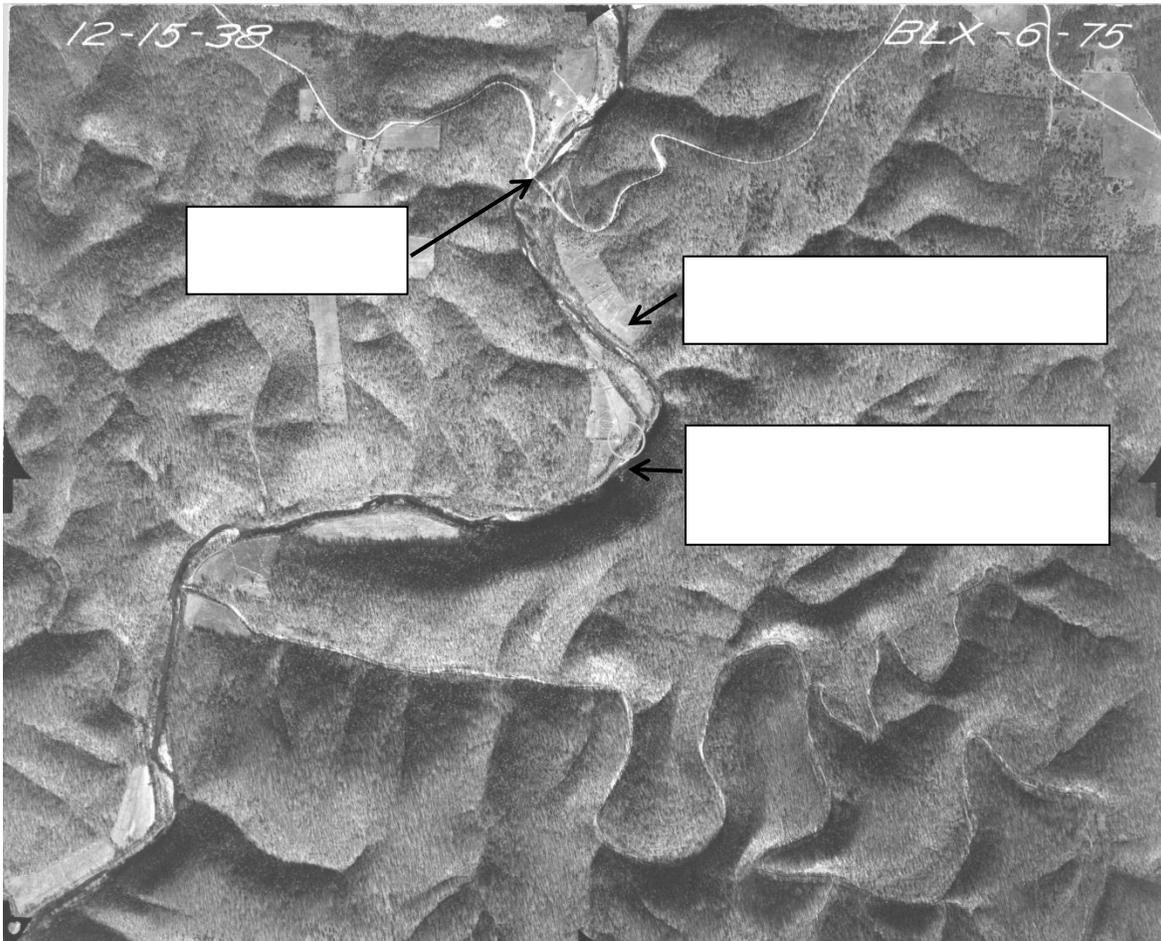
The purpose of the hydrology section of this chapter is to summarize the Hydrology, Karst, and Cave Specialist Report for the North Fork Access Project, which analyzes the direct, indirect, and cumulative effects of all alternatives on watershed condition for the Environmental Assessment (EA). The analysis defined impacts to beneficial uses, 303(d) listed (impaired) streams and waterbodies, karst geological resources (caves, sinkholes, springs, losing stream, and fens), and groundwater dependent ecosystems. The land management activities proposed under this project have the potential to affect water resources in a beneficial, indifferent, or adverse manner. For a detailed description of the purpose and need and all proposed activities for alternatives refer to Chapters 1 and 2 of the Environmental Assessment.

Affected Environment/Existing Conditions

The project is located within the North Fork Recreation Area on the Willow Springs Unit of the Ava/Cassville/Willow Springs Ranger District within Ozark County. Access to the recreation area is off of Highway CC, approximately 7 miles east of Dora, Missouri and 16 miles west of West Plains, Missouri. The project site is on the east bank of the river, immediately downstream from the CC Highway Bridge. This project lies within the 12 digit code (HUC-6) watershed known as Crooked Branch – North Fork River (110100060501). This watershed drains into Norfork Lake in Ozark County.

The North Fork River provides a unique recreation experience for the south central/southwestern Missouri region. The river supports quality opportunities for a diversity of recreation activities in a relatively undeveloped setting. Popular activities include floating, fishing, hunting, hiking, photography, wildlife observation, scenic viewing, and camping. Floating, primarily by canoe, is the major use of the North Fork River. Much of the appeal for canoeists and kayakers is the fast water and light rapids. Canoeing is extremely popular on weekends during the summer, moderate on weekdays during the summer, and light during the remainder of the year. Many floaters on the North Fork River visit from outside the local area when using local outfitter/guide resources. Recreationists are willing to travel a considerable distance to experience the North Fork River and its scenic surroundings.

The North Fork Recreation Area was constructed in the early 1960's, and since that time the river access has been reconstructed at least 2 or 3 times and the large asphalt parking lot has been replaced by a smaller, less formal, gravel surfaced parking lot as a response to repeated and frequent flood damage to the facilities. The site of the graveled boat ramp and large gravel play area is located adjacent to a meander bend and in the floodway of the river. During flood events, gravel is washed downstream and frequent repairs are needed. The North Fork River is a low gradient stream with a pool-riffle sequence and streambed material size of gravel to cobble. The river is incised with bedrock bluff controls or valley margins.



Picture 1. Aerial photo from 1938 of North Fork River with the historic Highway CC stream crossing and location of the North Fork Recreation Area prior to the constructed site.

An aerial photograph from 1938 (Picture 1 above) shows Highway CC crossing the river at the current launch/water play area location, cleared land in the current location of the North Fork Recreation Area developed facilities, and a cleared area downstream of the current recreation area. This indicates this site along the river has been disturbed for 80+ years.

Road stream crossings have a direct impact on stream morphology and aquatic habitat. Typically, stream crossings similar to the historic Highway CC crossing have openings that are too narrow to accommodate the width of the river. The river is forced through a small opening, altering upstream and downstream sections. Upstream, the small opening prevents streambed material passing through, causing bed material to aggrade (increase in height) the streambed. Upstream aggradation causes sediment and gravel storage, shallowing of water depth, widening of the channel, and alters the channel shape since the riffle/pool sequence can no longer develop. These alterations can cause increases in stream temperature. Downstream of the crossing, water forced through the smaller opening increases erosional forces and a scour pool develops. This causes the stream to degrade (lower) and creates a hydrologic jump that acts as an aquatic organism passage barrier.

Highway CC was relocated and the stream crossing was replaced with a bridge in the mid to late 1970's. The bridge replacement opened the river to flow over a wider area and allowed the North Fork River channel to flow more naturally. However, the aggraded gravel on the upstream side of the historic Highway CC crossing still exists in the channel. The channel remains over widened and shallow upstream, and downstream a deep and widened scour pool resulting from the historic crossing remains. Through time, some of this material has

moved within the channel and deposition of some of the excess bed load into the floodway at the recreation site occurs during floods.

The cleared areas seen in the 1938 aerial photograph also altered the site and their effects can still be observed in the North Fork River in the area of the recreation site. When vegetation is removed next to the river corridor for land conversion for agriculture (crop or grazing), long lasting effects to channel morphology and aquatic habitat occur. Vegetation along stream banks helps stabilize the bank during flood events. Once vegetation is removed, stream banks become unstable and contribute to the following effects in the channel: (1) accelerated erosion processes; (2) increased stream incision (down cutting of the streambed); (3) increased sediment input from eroding banks that deposit and fill pools important to aquatic habitat; (4) increased water temperature due to stream widening and shallowing; (5) and altered pool-riffle sequences important to aquatic habitat.

Floodplains are flat, vegetated areas that allow the erosive forces of a flood to dissipate and encourage deposition of fine materials and nutrients. Removing or changing floodplain vegetation affects floodplain and riparian area function by decreasing water storage capacity, leading to changes in the base flow and water temperature of the river. Removing or changing floodplain vegetation can also increase erosion of stream banks. Continued stream bank erosion causes the stream to down cut and lose its connection to the floodplain.

The amount and height of floodplain access has a direct consequence on water depth and the river's ability to transport gravel. In general, larger floodplains have lower flood flow depth and greater potential to store gravel. In contrast, channel incision confines the river, reducing floodplain size, increasing channel flood flow, and increasing the transport of gravel. This condition increases stream bank erosion and causes additional stream degradation. As this process continues, it can cause the stream to no longer function within natural variability, resulting in long lasting negative impacts to stream morphology and associated aquatic habitat.

Clearing of the floodplain and stream banks also removes sources of large wood. Large wood plays an important floodplain function by influencing stream morphology and helping to create aquatic habitat. Large wood on the floodplain slows flood flows and decreases the erosive process of floods. Root wads create scour pools that are important fishless pools for amphibians and macro invertebrates. Large wood log jams along stream banks help protect the bank from the erosional forces of the river and provide important benefits to channel morphology and aquatic habitat. Large wood along the river banks help store sediment and gravel during floods, maintain channel shape, and promote development of scour pools that provide shade and cover. Wood in the stream channel adds complexity to the channel, forming a variety of aquatic and riparian habitats. Large wood in the stream channel creates a braided system and promotes formation of islands as sediment is stored behind the structure. These mid-channel islands are key areas for riparian ecosystems. Scour pools also form in association with large wood in the stream, providing important aquatic habitat and lowering water temperature. In addition to loss of wood due to clearing of riparian corridors, there is a history of removing wood from the channel as a result of the historic practice of floating harvested logs downstream, a misconception that large wood is a barrier to fish movement, and due to concerns over hazards to floaters.

A survey of stream bank conditions and stream morphology was conducted in June and August, 2014. The survey area extended 2.5 miles upstream and 0.25 miles downstream of the project area. Most of the survey area is in U.S. Forest Service ownership and vegetation recovery has been occurring. Floodplain width varies within the survey and analysis area, with some sections having limited access to the floodplain and others having a wider floodplain. For the most part, the upper section of the channel is connected to the floodplain, riparian areas are well vegetated, and there is a good riffle/pool sequence. Large wood was also observed in the channel and along stream banks in the upper section of the area. The historical effects of the Highway CC bridge become apparent roughly 0.25 miles upstream of the bridge and some unstable stream banks are present just downstream of the current recreation site.

The North Fork Recreation facilities are located on a major longitudinal slope break in the North Fork River (Gubernick 2014). This transition in stream gradient can mean higher gravel aggradation potential in the

downstream reach. The higher the channel gradient, the more shear forces act on the streambed leading to greater ability to transport gravel (Gubernick 2014). While the gradient from upstream to downstream is not large, the downstream reach of the recreation site has a higher aggradation/storage potential for gravel. Gravel available in the system is stored for periods of time depending on the number and size of flood flows and becomes reactivated during high flow periods (Gubernick 2014). There is an increase in gravel stored at this site due to the historic Highway CC stream crossing and the addition of new gravel to the boat ramp and parking area after flood events. Additionally, gravel moving through the system is derived from eroding stream banks and unvegetated gravel bars. Movement of gravel and sediment is natural within a river system; however, the current and historical land management activities have increased the volume of gravel in the system, causing it to then function outside of the range of natural variability.

In summary, there is an increased amount of gravel stored in the North Fork River in the vicinity of the North Fork Recreation Area due to a long history of disturbance. Increased quantities of gravel are moving downstream during floods, resulting in effects to stream morphology and water quality and impacts to associated aquatic habitats.

Direct and Indirect Effects on Hydrology

Alternative 1

Effects would be the same for those described as Existing Conditions. The recreation site would continue to degrade the stream channel, water quality, and associated downstream aquatic habitats.

Alternative 2

The proposed action would separate water play users and commercial and/or towed watercraft users by constructing a new watercraft access on the same side of river closer to the CC Highway bridge. Proposed activities, mitigations, and associated design considerations to improve the existing condition are listed below.

Boat Ramp and Parking/Staging Area

The current boat ramp is located adjacent to a meander bend and in the floodway of the river. During flood events gravel is washed downstream and frequent repairs are needed. To improve this, the boat ramp would be moved next to the Highway CC Bridge which would allow the bridge abutment to protect the boat ramp from flood flow (Gubernick 2014). This would result in no real risk from floods to the new boat ramp; however, deposition of fine material on the boat ramp and parking area after larger flood events would be a concern (Gubernick 2014). Drainage of the boat ramp would be routed along its sides with a rock lined ditch, as would drainage of the parking/staging area. A 36-inch corrugated metal pipe would be placed to drain water along the highway and at the entrance to the recreation area. All drainage would be in a rock lined ditch and would run between the new boat ramp area and the toe of the road embankment and bridge abutment (Gubernick 2014). A cofferdam would be used around the base of the boat ramp when concrete is poured.

As a mitigation, the riparian buffer between the boat ramp and play area would require placement of large wood pieces and densely planted rows of low lying shrubbery (Gubernick 2014). The proposed ramp would not be in direct flood flow, but would be in a back eddy area and subject to deposition of fine grained material. Planting shrubbery and placing woody pieces in the floodplain would create a quiet zone where fine sediment can drop out. Managing to promote sediment drop out in the forested area would reduce the likelihood of sediment deposits occurring on the ramp or parking area (Gubernick 2014). Large wood pieces could come from clearing the site for the new parking/staging area or a nearby timber sale.

The parking/staging area and access road would be located in the floodplain in a deposition area, but would be situated to minimize impacts to the river. Roads have a direct and indirect adverse impact on watershed condition. Roads modify drainage networks and accelerate erosion processes, resulting in the alteration of physical and biological processes in streams by directly affecting water quality and aquatic habitat. Roads

directly alter natural sediment and hydrological regimes by changing streamflow patterns and amounts; sediment loading, transport, and deposition; channel morphology and stability; and water quality, stream temperatures and riparian conditions within a watershed (USDA Forest Service 2001, 2010).

There could be a short-term increase in sediment deposited into the river during construction of the boat ramp, access road, and parking lot. Until the area is paved, exposed bare soil would be present. Best Management Practices would be applied to reduce the potential short-term effects from nonpoint sources. The amount of sediment from construction would be minor and would not create a long-term adverse effect.

Water Play Area

The water play area would be located at the current boat launch site. Currently, gravel is washed away and deposited downstream when this area floods, potentially impacting aquatic habitats. Hydraulic modeling is currently being undertaken to determine the best solution for handling flood flow and minimizing these effects. The conceptual model includes a hardened water play area 80 feet by 40 feet. Outside of the hardened area, riprap would be used to assist with erosion control (Gubernick 2014). Riprap would be placed around the exposed riparian area and along an accessible pathway to the water. A hardened overflow flood channel would also be constructed to further reduce the effects of flood flow. Water begins to rise up into the water play area at flood stage and water ponding occurs when the main channel begins to back up. The overflow channel would allow water to flow through what should be an open chute cutoff of the main channel (Gubernick 2014). The overflow flood channel would allow the river to flood under more natural conditions and reduce movement of gravel off site. Additional mitigations would include planting along riverbanks where possible and placement of instream structures such as rock vanes, large wood, and small boulders where necessary. At the outlet of the flood flow channel, riprap would be used to repair banks along the North Fork River and to hold the outlet in place during floods (Gubernick 2014).

Large Wood Placement

Large wood is a missing component in this area of the North Fork River. Historic large wood log jams at the head of central and lateral gravel bars aid gravel accumulation and protect colonizing vegetation (Gubernick 2014). Vegetation helps stabilize the deposited gravel, making it more difficult for the river to move it. Once a gravel bar is stabilized, a very large flood is required to reactivate the gravel material. Material naturally moves through the river system, but currently gravel movement is at an increased rate within the area of the North Fork Recreation Area. Increased gravel is coming from several locations, including: (1) gravel from aggrading of the river from the historic Highway CC stream crossing, (2) gravel being placed in the current boat ramp and parking lot that washes away during floods, (3) unstable, bare stream banks, and (4) areas that see heavy repetitive foot traffic along the riverbanks.

A typical engineered, large wood placement is constructed using a combination of logs with and without root wads. Some logs would be anchored into the bank, while others would be stacked overlapping. About 50% of the trees used need a root wad. For logs with root wads the trees need to be 16 to 24 inches in diameter and 40 to 55 feet in length. Logs without root wads can be smaller, with a combination of logs 12-16 inches in diameter and 16 + inches in diameter and 50 feet in length. Wood used in this structure needs to be rot resistant. Typically, tree species that are resistant to rot include cedar, locust, oak, and walnut. Wood used for the wood structure would come from the trees removed during construction of the new boat ramp and parking area, or a nearby timber sale. At the site of the large wood structure, willows would be planted to help stabilize gravel/sediment. During construction of the large wood structures there would be potential for increased levels of suspended fine sediment. This should be minor, but if needed, a silt curtain designed to contain and control suspended silt could be implemented.

Large wood structures are proposed to be placed in several locations as mitigation measures and for restoration of the channel morphology. Final count of logs would be determined in the final design after completion of the hydrological modeling.

The sites of wood structure placements that are key mitigation measures include:

- **Site 1:** an area next to the outlet of the overflow flood channel
- **Site 2:** the unstable gravel bar across from the outlet of the overflow flood channel
- **Site 3:** downstream on the same side as the overflow flood channel on a user created channel from the Ridge Runner trail
- **Site 4:** at the large unstable gravel bar below the campground on the same side of the river as the recreation site

The sites for restoration include:

- **Site 5:** opposite side of the river from site #4
- **Site 6:** toward the end of the campground across from the Blue Spring parking area.

The placement of the boat ramp at a new location, use of riprap in the play area, hardening of the water play area, and the overflow flood channel would reduce the volume of gravel being transported during flooding. However, this would not eliminate all potential effects of the recreation site on stream morphology and aquatic habitat. Engineered log jams would help protect stream banks from increased erosion during flooding; create pools for aquatic habitat and insect habitat that provide food for aquatic species; provide cover and shade to keep stream temperatures cooler; act to store sediment; increase channel complexity; and aid in retention of vegetation and floodplain connectivity.

Alternative 2 would improve conditions within the analysis area by taking steps to correct adverse effects linked to existing conditions. While it is not possible to eliminate all direct and indirect effects due to the location of the recreation site within the floodplain and wetland, the proposed actions, mitigation measures, and design considerations would reduce these effects substantially.

Mitigation

Impacts from implementation of Alternative 2 would be indirect and non-significant, provided mitigation measures (Appendix D, p. D-2), BMP's, and Forest Plan Standards and Guidelines are followed.

Monitoring

Implementation monitoring would be conducted by the project administrator.

Cumulative Effects on Hydrology

Cumulative Effects Area (CEA)

Spatial boundary

The scope of the cumulative effects analysis includes HUC-6 watersheds (Hydrologic Unit Code, 12 digits). The Crooked Branch – North Fork Watershed is the only watershed within the analysis area. A watershed map in reference to the project area is included in Figure C-3 (Appendix C, page C-3).

Temporal boundary

The time period for the cumulative effects analysis is indefinite. Alternative 2 proposes mitigations to reduce cumulative effects from the recreation site.

Cumulative Effects Analysis

Alternative 1

No short-term cumulative effects to watershed condition would occur because there would be no construction activities. Proposed mitigation measures would not occur and adverse cumulative effects under the existing condition would continue.

Alternative 2

Relocation of the boat ramp next to the Highway CC Bridge would decrease the volume of gravel washed downstream during flood events. While effects of having a boat ramp along the river would still occur, this new location would be beneficial to stream health and aquatic habitat in comparison to the existing condition. The proposed site of the new parking lot/staging area would have an impact on the function of the floodplain; however, it would be located in an area that would have the least impact. Additionally, it would be designed to drain properly and would reduce the potential for negative water quality effects from nonpoint source pollution.

Placement of floodplain large wood between the boat ramp and the water play area would help protect the floodplain during flood events and reduce the fine grain material depositing on the boat ramp and the parking/staging area. The overflow flood channel would allow the river to flood under more natural conditions and reduce the way flooding moves gravel off site, thereby reducing impacts to stream health and aquatic habitat.

The water play area is located within the river's floodplain and wetland. This has a long-term adverse effect to the stream, floodplain, and wetland; however, the proposed actions would improve the existing condition and reduce effects to stream health and water quality. The proposed large wood structures would help store and stabilize gravel, allow vegetation to colonize the floodplain, and improve stream morphology and aquatic habitat. Overall, the proposed actions and mitigation measures would reduce the impact from existing conditions at the site.

A short-term increase in sediment into the river may occur during the construction of the boat ramp, access drive, parking lot, water play area, and large wood log jams. The amount of sediment mobilized would depend on the length of construction and the quantity and duration of storms. Best Management Practices would be applied to reduce the potential cumulative effects from increased sediment. If needed, a silt curtain could be used during construction activities.

Improvements to indicators of watershed condition would occur as a result of implementation of Alternative 2; however, it would not change watershed condition class. Improvements would occur to aquatic habitat condition, aquatic biota, and riparian/wetland vegetation. Long-term, the recreation site would still have some effect on the North Fork River, including the associated floodplains and wetlands; nevertheless, this project would greatly reduce the effects resulting from existing conditions at the site.

Alternative 2 would improve conditions within the analysis area by taking steps to decrease cumulative adverse effects linked to existing conditions. While it is not possible to eliminate all cumulative effects due to the location of the recreation site within the floodplain and wetland, the proposed actions, mitigation measures, and design considerations would reduce these effects substantially.

Irreversible or Irretrievable Commitment on Hydrological Resources

Neither of the alternatives would have an irreversible or irretrievable effect on water resources of the North Fork River.

WILDLIFE

Background

Resource Impacts or Issue Addressed

This section discloses effects on Management Indicator Species (MIS), Neotropical birds, federal threatened and endangered species (T&E), Regional Forester's Sensitive Species (RFSS), and state endangered species.

Scope of the Analysis

The spatial boundary used to evaluate **direct and indirect** consequences was approximately 14 acres because this area would receive impacts from the proposed activities. The spatial boundary used to address **cumulative** impacts for all species was a one mile area surrounding the project area and 50 meters on either side of the North Fork River. This area includes the proposed project area and private lands. Cumulative effects area is dependent on species habitat needs.

The temporal boundary or measurement used to assess **direct, indirect and cumulative** consequences is 10 years. This would be enough time to see effects from implementation and management in the area.

Methodology

Geographic Information System (GIS) data, site visits, satellite imagery, and the Missouri Natural Heritage Database were used to determine habitat and occurrences for MIS, T&E, and RFSS.

Affected Environment/Existing Conditions

The current boat launch/water play area is approximately 160'X100' in size. It is comprised of native river gravel toward the river and limestone gravel below the asphalt parking lot. No vegetation is growing within the current boat launch/water play area. This site is prone to erosion during high water events, contributing to sediment loading in the river. This sediment loading could degrade Ozark hellbender habitat and population status.

The current boat launch site has a history of being damaged during high flood events. These events occur every few years. One previously built boat launch, which was constructed of railroad ties and cement, was destroyed and covered with gravel after high water events. In 2011, the structure was uncovered after flood events and in 2012 it was removed because of safety issues.

The current boat launch has to be maintained after flood events occur. Gravel that was removed from or transported to the current launch is used to maintain the launch. Off-site gravel is sometimes brought in to maintain the launch site, adding to concerns of deposition downstream where current Ozark hellbender habitat is located.

White Nose Syndrome

White nose syndrome (WNS) is a fungus that is infecting hibernating bats in the northeastern and eastern United States. This fungus often forms white tufts on the bats' muzzle. These infected bats appear to have depleted their winter fat reserves and congregate much closer to the entrance of the hibernacula than usual.

White nose syndrome has been confirmed in New York, Vermont, New Hampshire, Rhode Island, Connecticut, Massachusetts, New Jersey, Pennsylvania, Maryland, Maine, West Virginia, Virginia, North Carolina, Kentucky, Tennessee, Arkansas, South Carolina, Wisconsin, and Michigan. Tri-colored, little brown, northern long-eared, small-footed and Indiana bats have been affected. White Nose Syndrome has been confirmed in Missouri, including the Mark Twain National Forest.

Currently, the Mark Twain National Forest has extended the emergency cave closure order until 2016. Since the proposed project would not affect caves or bats that reside in them, this project would not contribute to the spread of this fungus within the Mark Twain National Forest.

Direct and Indirect Effects on Wildlife

State Endangered Species

There are five species that occur in Ozark County on the Missouri State endangered species list. They are: Ozark hellbender, Bachman's sparrow, gray bat, northern long-eared bat and plains spotted skunk. Plains spotted skunk will be discussed here. The Ozark hellbender, gray bat and northern long-eared bat are discussed under federally threatened and endangered species, and Bachman's sparrow under MIS and RFSS.

Table 3.3. Habitat types and availability for Missouri state endangered species.

Species	Habitat	Habitat available in project area
Plains spotted skunk (<i>Spilogale putorius interrupta</i>)	Open prairies, brushy areas, and cultivated lands	Yes

The No Action Alternative would provide brushy and open woodland habitat to a greater extent than Alternative 2.

Alternative 2 would remove habitat from three acres on which the new boat access would be built. However, habitat would still be available in the project area under both alternatives.

Management Indicator Species

The Mark Twain MIS and Natural Communities include: northern bobwhite, summer tanager, Bachman's sparrow, worm-eating warbler, red bat, glades, open woodland, and groundwater seepage communities. These species and natural communities were selected because they are considered most likely to provide an indication of the effects of management in response to changing conditions.

Bobwhite quail (*Colinus virginianus*) – The bobwhite quail is usually found in prairies and grasslands along forest edges. Bobwhite quail form tight coveys at night with each bird facing outward. This conserves heat and makes it very difficult for predators to sneak up on the covey. They prefer to nest along the edge of woods or in fields of tall grass or brush piles. The primary nesting season for quail is between March and September. Because of declining habitat, populations have been declining. This decline in the population is not surprising given that many other prairie and grassland species numbers are declining in Missouri, the Midwest and other portions of the country. Habitat for this species is not found within the project area.

Summer tanager (*Piranga rubra*) – The summer tanager is found in pine-oak forests, bottomland deciduous woodlands, and parks. It forages on bees, wasps, and other insects, as well as berries and other fruits. Primary nesting season is May-June (NaturServe 2006).

Bachman's sparrow (*Peucaea aestivalis*) – In Missouri, this species lives in areas with scattered, shrubby vegetation and a dense herbaceous understory. They are found in dry open pine or oak woods with a ground cover of grasses and shrubs; brushy or overgrown hillsides; or overgrown fields with thickets and brambles (MDC 1997). They also use glade habitat. Missouri lies on the northwest edge of this species' range. Birds nest and forage on the ground for insects and seeds. Primary nesting season is in late June. Habitat for this species is not found within the project area.

Worm-eating warbler (*Helmitheros vermivorum*) – This ground nesting warbler uses large tracts (minimum 25 acres) of upland deciduous forest on wooded slopes and ravines, usually in drier areas, foraging near or on the ground for insects. This species is most abundant in mature woods but also may be common in young and

medium-aged stands of continuous forest (Patton and Hanners 1998). This species is very sensitive to forest fragmentation and requires contiguous forestland. Primary nesting season is June-August. Habitat for this species is not found within the project area.

Red bat (*Lasiurus borealis*) – In Missouri, forests are used year round. In winter, they are known to hibernate in trees and under leaf litter. However, on warmer winter nights they forage for insects. They consume moths, crickets, flies, mosquitoes, true bugs, beetles, cicadas, and other insects. They mate in August and September and females give birth in late spring or early summer.

Glade – Glade habitat is not present in the project area.

Open woodland – Open woodland habitat is not present in the project area.

Ground water seepage communities – Springs are not present in the project area, however the North Fork River is included in the project area and springs are located within the Cumulative Effects Area (CEA).

Neotropical Birds

The Migratory Bird Treaty Act and an Executive Order (Responsibilities of Federal Agencies to Protect Migratory Birds) and a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service are followed by the U.S. Forest Service to promote the conservation of migratory birds.

Neotropical migratory birds are represented by MIS summer tanager, worm-eating warbler, and Bachman's sparrow; by RFSS/SVE (Species Viability Evaluation) Bachman's sparrow, cerulean warbler (*Setophaga cerulean*), migrant loggerhead shrike (*Lanius ludovicianus migrans*), and Swainson's warbler (*Limnothlypis swainsonii*); and by additional SVE species including whip-poor-will (*Antrostomus vociferous*), prairie warbler (*Setophaga discolor*), Kentucky warbler (*Geothlypis formosa*), field sparrow (*Spizella pusilla*), blue-winged warbler (*Vermivora cyanoptera*), and Bell's vireo (*Vireo bellii*). These species represent habitats that would include grasslands; early successional forest/shrubland; immature, dense woodland; mesic bottomland and riparian areas; and open oak and pine woodlands (USDA 2005). All these species are listed as priority species for the Partners in Flight bird conservation plan for the Ozark-Ouachita Highlands. These birds, along with other neotropical migrants are experiencing population declines due to habitat change, fragmentation in breeding and wintering areas, and invasive bird species. Additional concerns for population declines are contaminants and poisoning in both breeding and wintering grounds. Neotropical migratory birds use Mexico, the Caribbean, and Central and South America as wintering grounds.

Habitats in the project area that are important to neotropical birds include bottomland hardwood forests. Forest Service land surrounds the North Fork Access analysis area; however the CEA is interspersed with private land, which may encourage use of this area by European starlings and brown-headed cowbirds. These birds use forest edge and areas near urban and agricultural lands; therefore there may be increased use by these birds where private land is adjacent to Forest Service lands. Starlings and cowbirds are a threat to neotropicals because they are larger and are well-documented nest predators.

Alternative 1

There would be no direct effects of proposed activities such as loss of individuals, nesting, or roosting habitat.

For all MIS species, natural succession and weather events would still change habitat conditions in the project area. Forested habitats would still be available, retaining nesting, roosting and foraging habitat. The area is adjacent to the state highway; passing vehicles and recreationists could introduce and spread noxious weeds in the project area.

Alternative 2

Potential direct effects to birds are loss of young and nests if construction of new boat access occurs during breeding season. Mature birds would be able to move from this area and may re-nest if the first nest is lost.

Potential direct effects to bats are loss of adult bats, if they are in hibernation and cannot wake up fast enough to leave, and during maternity season, when young are not able to care for themselves.

Potential indirect effects are changes to the existing habitat for MIS. All MIS species use tree and ground cover to some extent.

Removal of trees within the project area would indirectly affect red bats because they are tree bats; however roosting habitat would still be available within the project area. Bachman's sparrow, northern bobwhite quail, and worm-eating warbler habitat does not occur within the project area and would not be affected by proposed activities.

The proposed activities would permanently remove approximately one half acre of trees within the project area. Other sites, such as the edges of the current boat access, and the picnic area leading down to the North Fork River will be rehabilitated with riparian plants. Existing habitat would be available for MIS.

Threatened and Endangered Species

The March 22, 2012 U.S. Fish and Wildlife Service list was used for this project analysis on federal threatened and endangered species. A biological evaluation (BE) with detailed effects analysis can be found in Appendix B in this document. Gray bat, Indiana bat, northern long-eared bat, and Ozark hellbender were species considered for the North Fork Access Project.

Alternative 1

Gray bat - No direct effects would occur to the species because there are no documented maternity colony or hibernacula caves within the project area. Foraging areas for gray bats would not be altered in Alternative 1, however, over time excess sediment would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area.

Indiana bat - There would be no direct or indirect effects to the Indiana bat. Numerous bat surveys conducted in the past decade indicate that there is no presence of Indiana bat on the ACW Ranger District. This District is in the extreme western range for Indiana bats, which indicates there would not be a great population (Gardner 2003). The nearest maternity colony is 90 miles northeast and the nearest hibernaculum is 39 miles southwest of the project area and used sporadically. Hazard trees, except those posing an immediate safety hazard, would be removed between November 1 and April 1, when possible to minimize impacts to unoccupied maternity roosting habitat within the project area. Riparian foraging habitat would not be altered in Alternative 1, however, over time excess sediment would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area.

Northern long-eared bat - No direct effects would occur to the species because tree removal is not proposed in the project area under this alternative. Riparian foraging areas would not be altered in Alternative 1, however over time excess sediment would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area. Maintenance of the recreation area would continue and hazard trees would be removed between November 1 and April 1 when possible to minimize impacts to roosting habitat within the project area.

Ozark hellbender - There would be no direct effects to the species from Alternative 1. The species is located downstream of the current boat access site and not at the site. Indirect effects from Alternative 1 include; excess sediments entering the river during high flood events from the current boat launch site. This sediment could enter hellbender habitat and nest sites, filling them in creating unusable habitat, as well as degrading water quality for the species and its prey.

Alternative 2

Gray bat - An analysis was completed and is found in the Biological Evaluation for North Fork Access Project. Proposed activities were found to have a determination of “may affect, not likely to adversely affect” the gray bat.

Indiana bat - An analysis was completed and is found in the Biological Evaluation for North Fork Access Project. Proposed activities were found to have a determination of “may affect, not likely to adversely affect” the Indiana bat.

Northern long-eared bat - An analysis was completed and is found in the Biological Evaluation for North Fork Access Project. Proposed activities were found to have a determination of “not likely to cause jeopardy” to the Northern long-eared bat.

Ozark hellbender - An analysis was completed and is found in the Biological Evaluation for North Fork Access Project. Proposed activities were found to have a determination of “may affect, not likely to adversely affect” the Ozark hellbender.

Regional Forester Sensitive Species

The 2011, R-9 Regional Forester Sensitive Species (RFSS) list is being utilized; 139 species are currently listed. All of the current RFSS species are evaluated in the Biological Evaluation for North Fork Access Project. There is habitat for 20 RFSS in the project area.

Direct and indirect effects are located in the RFSS Biological Evaluation. Due to a lack of suitable habitat, 119 of the RFSS in the area have a determination of “No Impact” (NI).

Alternative 1

An analysis was completed and is found in the RFSS Biological Evaluation for the North Fork Access Project. Alternative 1 “may impact, not likely to adversely impact” or cause a trend toward federal listing of the 20 RFSS that have suitable habitat in the North Fork Access project area.

Alternative 2

Alternative 2 “may impact, not likely to adversely impact” or cause a trend toward federal listing of the 20 RFSS that have suitable habitat within the North Fork Access Project area.

Cumulative Effects on Wildlife

Cumulative Effects Area (CEA)

The cumulative effects area (CEA) for all species is a one mile radius around the project area and a 50-meter buffer around the North Fork River from the project area south to the Forest proclamation boundary. Forest Service lands and private lands are interspersed through the CEA. The cumulative effects area was chosen because there is a variety of habitat for MIS, threatened and endangered, and Forest Service sensitive species. Effects of the project that would be considered are for the past ten years and those likely to occur in the next ten years. This would allow aquatic and riparian habitat enough time to show change with any management occurring on them.

Cumulative Effects Analysis

Past, Present, and Foreseeable Future

Within the CEA on Forest Service lands, recreation activities have taken place in the project area within the last ten years. Watercraft users, swimmers, anglers, as well as horseback riding, hiking, camping, and hunting are some of the activities that have occurred, currently occur, and will occur in the future on Forest Service lands.

These activities can cause stress to wildlife either by noise or actual contact with humans. They can also introduce non-native invasive species which can degrade habitats used by MIS, T&E, and RFSS.

Privately owned pastures are grazed almost year round, keeping these areas open for grassland foraging species like scissor-tailed flycatchers, Bachman's sparrow, and bobolinks. Most pastures have fence rows and riparian zones available for nesting. There are also private residential houses, two-lane highways and dirt roads within this area. These activities and structures have changed the natural environment. Natural succession, weather events, timber theft, and arson fires are ongoing and could change the existing habitat.

Foreseeable actions within this area are a continuation of recreation. Recreation activities which are reasonably expected to occur in this area are listed above. The North Fork River is highly used by watercraft users, anglers, and swimmers. There are seven permitted outfitter/guides that use the North Fork River boat access. The heaviest use is during summer. Most of the outfitters are located along the North Fork River. Two are located above the project area and include campgrounds, cabins and boat accesses into the river, which likely contribute gas, oil, and other contaminants into the river.

Recreationists on the North Fork River operate small johnboats with inefficient and polluting two-stroke engines. Watercraft and river outfitters may move or remove boulders that provide habitat for hellbenders. People may catch hellbenders and kill them out of ignorance or fear. Activities on or adjacent to the North Fork River have had an impact on water quality and aquatic flora and fauna. Development and recreational use would continue, possibly at greater levels. These activities likely degrade water quality with pollutants, such as sediment, fecal coliforms, and chemicals and may reduce the availability of habitat for Ozark hellbenders, mussels, reptiles and prey species for eagles, neotropical migrants and bats that forage at the North Fork River.

Management Indicator Species/Neotropical Migrants

Alternative 1

Habitat for red bats and neotropical migrants would remain intact with the No Action Alternative. Hazard trees would be removed between November 1 and April 1, when possible to minimize impacts to roosting/nesting habitat within the project area. Riparian foraging habitat would not be altered under Alternative 1 however, over time, excess sediment would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area.

Alternative 2

Within the project area roosting/nesting habitat would be removed; however, roosting/nesting habitat would still be available within and adjacent to the project area. Large wood structures would aid in improving water quality and riparian habitat for aquatic prey species. These effects would not add to negative cumulative effects occurring within the CEA.

Threatened and Endangered Species

Alternative 1

Indiana bats have not been documented on the ACW Ranger District. Thirteen years of negative bat surveys and the District's position on the western extreme of the species range both indicate low or no Indiana bat use. Foraging habitat and maternity roost trees would still be available within the project area for Indiana bats, should they use the area. Gray bats and northern long-eared bats are known to use the Willow Springs Unit. However, caves housing gray, Indiana, or northern long-eared bat are not found within the project area and would not be affected by proposed activities.

Foraging habitat for bat species and roost trees for Indiana and northern long-eared bats would still be available within the project area. Alternative 1 would not cause short term negative cumulative effects to gray, Indiana, or northern long-eared bats. However, over time, excess sediment for this site and others upstream of the

project area would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area.

Alternative 2

Gray Bat – Negative cumulative effects are not expected for gray bats. The gray bat cave is located upstream of the project area and would not be affected by proposed activities. The Forest Plan standard and guidelines, mitigation measures and placement of sediment control structures during construction would maintain downstream foraging habitat for gray bats. Foraging habitat upstream of the project area would be unaffected and available for use. After construction is completed, foraging habitat for gray bats would be improved, because excess sediment entering the North Fork River would be reduced. In addition, large wood structures would aid in catching excess sediments, enhancing water quality and habitat for prey species. Therefore, the potential for adverse impacts to gray bat by proposed activities in the North Fork Access Project is remote and considered discountable.

Indiana bat - There are no cumulative effects for Indiana bat since there are only indirect effects to unoccupied suitable habitats. The nearest Indiana bat hibernaculum is 39 miles southwest of the North Fork Access Project. This hibernaculum has not been occupied since the winter of 2004/2005 (Davidson 2005). The closest maternity colony is located on the Salem Ranger District about 90 miles northeast of the North Fork Access Project area. Bat surveys conducted in the last thirteen years have not detected any Indiana bats present on the ACW Ranger District. With application of standards and guidelines, mitigation measures and placement of sediment control structures during construction, potential impacts would be further minimized. Therefore, potential impacts to Indiana bats from proposed activities are considered remote and discountable.

Northern long-eared bat - Negative cumulative effects are not expected for the northern long-eared bat because caves will not be affected by the proposed activities. The parking and boat launch portion of the project area is three acres in size, and although trees would be removed, suitable roost trees would still be available for use. Foraging habitat would be available throughout construction of the new access and foraging activity would not be disrupted. Forest Plan standard and guidelines, mitigation measures, and placement of sediment control structures during construction would further minimize effects to foraging and roosting habitat. After construction is completed, foraging habitat for northern long-eared bats would be improved, because excess sediment entering the North Fork River would be reduced. In addition, large wood structures would aid in catching excess sediments, enhancing water quality and habitat for prey species. Therefore, the potential for adverse impacts to northern long-eared bat by proposed activities in the North Fork Access Project is remote and considered discountable.

Ozark hellbender – Short term cumulative effects are expected to occur to the hellbender, due to in-stream construction work on the new boat access. During construction Forest Plan standard and guidelines, mitigation measures, and placement of sediment control structures would minimize effects to cover and nesting habitat. Instream construction would be timed before breeding season or after, if possible to further minimize impacts from proposed activities. Completion of the North Fork Access Project would ultimately help maintain and enhance suitable habitat and may improve water quality for Ozark hellbenders. Therefore, potential adverse impacts to Ozark hellbender are considered remote and discountable.

Regional Forester Sensitive Species

Alternative 1

There would be no cumulative effects to the RFSS species. Habitat would still be available for all 20 species. Effects to aquatic species would be the same as those for the Ozark hellbender. Effects to terrestrial species would be the same as federally listed bats and MIS.

Alternative 2

The North Fork Access Project would maintain and enhance aquatic habitat for RFSS species occurring in the area. Cumulative effects would be minimal to RFSS as Forest Plan standard and guidelines, mitigation measures, and sediment control structures would be in place during implementation of the project.

Unavoidable Adverse Impacts

The proposed alternatives would not cause unavoidable adverse impacts.

Irreversible or Irrecoverable Commitment of Resources

There are no irreversible or irretrievable commitments of resources.

Consistency with the Forest Plan

The project is consistent with Forest Plan goals, standards and guidelines (pp. 2-6 – 2-14, 3-11)

Consistency with Laws, Regulations, and Handbooks

The project is consistent with applicable laws, regulations, and handbooks.

RECREATION

Affected Environment/Existing Conditions

The project area is located on the North Fork of the White River on the Willow Springs Unit of the Ava/Cassville/Willow Springs Ranger District in Ozark County, Missouri. Access to the recreation area is off of Highway CC, approximately 7 miles east of Dora, Missouri and 16 miles west of West Plains, Missouri. The project site is on the east bank of the river, immediately downstream from the CC Highway Bridge.

North Fork Recreation Area was identified as a Signature Site through the Mark Twain's 2007 Recreation Facility Analysis, since it provides a base from which visitors can access the North Fork of the White River, enjoy the two adjacent trailheads, and participate in other dispersed recreation activities. The trailheads access the Ridge Runner Trail, a National Recreation Trail which connects to the North Fork Section of the Ozark Trail, and Blue Spring Trail which connects to the Devil's Backbone Wilderness and its trail system. The Devil's Backbone Wilderness encompasses 6,687 acres with approximately 13 miles of trails, and is dissected by the North Fork of the White River. The North Fork Recreation Area consists of a campground with 20 sites (2 electric, 18 non electric) in 3 separate loops, water hydrants, trash receptacle and two vault toilets; and the day use area consisting of a river access/water play area, picnic sites containing picnic tables and pedestal grills, one vault toilet, a hydrant, and trash receptacle.

The North Fork Access Project area has a recreation emphasis for Developed Recreation characterized by a Rural Recreational Opportunity Spectrum (ROS) in Management Prescription 7.1 (USDA 2005). Within the rural setting, the theme is that of altered landscapes with a natural appearing backdrop. Ranches, administrative sites, and moderately developed resorts are sometimes evident. Managerial outlook would have obvious regulation and information, education and law enforcement staff available. Motorized and mechanized travel is common and often separated. Socially, there is expected to be high interaction among users and there would be little challenge or risk associated with being outdoors.

Direct and Indirect Effects on Recreation by Alternative

Alternative 1

The North Fork Day Use Area would remain as is. This alternative provides a baseline or reference point against which to describe environmental effects of the action alternative. Selection of this alternative would not foreclose the option for future management in this area.

If Alternative 1 is selected, no new federal management activities would be initiated. Routine maintenance of the existing Forest Service recreation facilities would continue as funding allows. Changes might occur through natural processes or future management direction.

Some consequences of selecting this alternative would include: 1) public safety would not be improved; and 2) sediment loading into the river would continue.

A potential change that may occur if Alternative 1 is selected is that the current launch area may be reconfigured to restrict vehicle traffic from approaching the water. People who currently drive to the river for watercraft launch would have to carry down all watercraft. This would include the outfitter/ guides and could result in a net loss of profit for them as it would take longer to launch.

Alternative 2

Implementation of this alternative could, in the short term, have a negative impact on users because most users do not readily embrace change. In the long term, this alternative would have a positive effect on the safety of both watercraft and water play users. Separating access between watercraft and water play users decreases the chance of vehicle/pedestrian conflict. In 2014, permitted outfitter/guides transported approximately 7,312 users and associated watercraft to the access area. Based on vehicle counts, the number of people using the area in 2013 totaled approximately 5,240 (if 2 people/vehicle) or 7,861 (if 3 people/vehicle). These numbers together depict several thousand people using the same footprint on the land in one season (March 1-November 30). Separating the uses benefits the safety of users because each type of use would not have to compete for space as they do now at the existing access.

The proposed action would also decrease the amount of required maintenance. As noted earlier, gravel and heavy equipment is used to repair the current site when flooding occurs. This practice increases sediment loading into the river. The new design would be flood resistant and the Forest Service would maintain the areas with no additional gravel, resulting in decreased sediment loading into the river.

Widening the road width to a 24 foot driving surface would have a positive effect on recreation user enjoyment of the area. This would also provide a safer driving experience for all users (day use and overnight) when they are entering and exiting the North Fork Recreation Area.

Project implementation would have a short term effect on aesthetics in the area. Disturbance of any kind in the short term is not pleasing to the eye, but after a couple years of allowing vegetation to grow, aesthetics would improve.

Large wood structures would be placed in the river. The large wood structures would provide a catchment for sediment and over time would deepen the river channel and develop pools in the river. Fishing would be improved as a result and as the river channel deepens, floater recreation experience should be improved as the float would be a continual flow rather than dragging bottom in areas and sometimes needing to portage across small areas of low water. The trees for these structures would, in part, come from the area where the new launch would be constructed, and the rest from a nearby timber sale area.

Users of Mark Twain National Forest can camp on any National Forest land surrounding the project area, and this type of dispersed use would continue. The North Fork Access Project would not have an effect on dispersed recreation. Additionally, the Forest Service is not proposing any Wilderness designation within the North Fork Access Project area.

Cumulative Effects on Recreation

Cumulative Effects Area (CEA)

A cumulative effects spatial boundary of the North Fork Access Project is a 10-mile radius around the North Fork Recreation Area. This boundary was selected because this is the extent to which cumulative effects

information would be measurable, meaningful, and relevant. The cumulative effects are based on a five year term from completion of project.

Cumulative Effects Analysis

Past, Present, and Reasonably Foreseeable Actions

The North Fork Recreation Area features developed recreation opportunities including camping and river activities on National Forest lands. No other Forest Service developed recreation activities such as these are found within the spatial boundary of the project.

Construction of the North Fork Recreation Area started in the mid 1960's when CC Highway was located where the current access is. At that time, the location of the proposed ramp is where users launched watercraft. The current access has been used since the 1970's when the new location of CC Highway was moved upstream, to its current location. In the early 1980's, a structure of timbers and gravel was constructed as an access, and because of the repeated floods, the Forest Service decided to remove the structure because maintenance was not cost effective. Based on data from the National Oceanic and Atmospheric Administration (NOAA) advanced hydrologic prediction server, historical crests have been noted in the 1980's, 1990's and 2002 on the North Fork River confirming flooding occurs. More recent floods not recorded by NOAA have occurred where the Forest Service and outfitter/guides have maintained or repaired the area by hauling gravel on site and using equipment to spread the gravel. The hydraulics of the river in the particular area of the current boat ramp promotes swifter water that flows into the east riverbank and causes damage and erosion to the area.

National Forest System lands:

MTNF Non-native Invasive Plant (NNIP) Control Project (Decision Notice 2/14/2012). This project is designed to manage existing and future non-native invasive plant infestations on the Mark Twain National Forest, (not only the North Fork Access project area) through an integrated approach using a combination of chemical, manual, mechanical, and biological control methods.

Blue Hole (Decision Notice 9/04/09): Activities included prescribed burning and vegetation management.

Private/State lands:

There are private lands within Ozark County that have the same uses (campground and access to river) as found at North Fork Recreation Area. The seven businesses that use the North Fork Recreation Area under special use permits as outfitter/guides also have campgrounds and/or cabins where members of the public can overnight. These permittees also have private river accesses that are not available to all publics. There are two other public access points downstream of the North Fork Access Project area. They are Missouri Department of Conservation watercraft accesses and would continue to be available for all public users. The North Fork Recreation Area is a critical public access point because of its location on the North Fork River.

Cumulative Effects Discussion

The topography of the land and land ownership that surround the North Fork Access Project area does not promote more public use than what is already happening along the North Fork River. The proposed actions, with mitigation measures as appropriate, are considered to be consistent with Recreation Opportunity Spectrum (ROS) objectives. The cumulative effect of the action alternative would positively affect the users of the area by separating water play and watercraft users. Implementation of Alternative 2 would enhance user safety as compared to the existing condition. The separate access between water craft and water play users decreases the chance of vehicle/pedestrian conflict. Water play users would not have to avoid vehicles backing down towards river and unloading watercraft where they are recreating. For watercraft users, the ease of not worrying about water play users in their path would be a benefit.

User enjoyment would be enhanced by providing additional parking and parking for vehicles with trailers. Currently all users, whether single car or vehicle with trailer, park in the same parking area. Vehicles with trailers at times have taken 3-4 single car parking spots. The proposed new launch access would allow room to park vehicles with trailers.

A moderate pattern for dispersed recreational use has been fairly constant over the past 10 years and is not expected to change considerably. There would be no additional resource management activities in the project area within the reasonably foreseeable future. Private landowners within 10 miles of project area may clear land of timber, but that activity would not affect the North Fork Access Project.

The combined effects of past actions, the proposed action and its alternatives, and actions in the reasonably foreseeable future on the project area and immediately adjacent lands are not substantial. While there may be short-term negative impacts to user satisfaction during the implementation of management activities, the long term effect would be an increase in the quality of future recreation opportunities.

VISUAL RESOURCES

Affected Environment/Existing Conditions

The North Fork Access Project is located within the North Fork Recreation Area on the Willow Springs Unit of the Mark Twain National Forest. The project area is located in T24N, R11W Section 15. The project analysis area is located in the day use area within the North Fork Recreation Area and covers approximately 10 acres of National Forest system lands. The 2005 Forest Plan identifies this area is within management prescription (MP) 7.1 (Developed Recreation Areas). Goals for this management prescription are:

1. Emphasize recreation activities such as camping, picnicking, group activities, and other recreation development.
2. Recognize existing recreation facilities and future needs to provide sites for highly developed recreation intended to serve various user groups.
3. Encourage development of interpretive and environmental education opportunities.

The **Visual Quality Objective (VQO)** is determined for a specific area by referring to the visual quality matrix found in the standards and guidelines for each management prescription. Each district has the variety classes and sensitivity levels mapped and the criteria for determining variety class and sensitivity level are documented in the Forest Plan, Appendix G. They may be changed based on field conditions.

The North Fork Access project area falls into Variety Class A (Distinctive). This area includes segments of the Ridge Runner National Recreation Trail and is adjacent to the Devil's Backbone Wilderness.

Sensitivity Level 1 travelways located in the project area are: Highway CC which traverses east and west across the north edge of the project area and provides access into the North Fork recreation area and the North Fork River. In addition, the National Recreation Trails are rated as Sensitivity level 1 travelways (Most Sensitive).

The VQO in MP 7.1 in Variety Class A along the Level 1 travelways is Retention for the foreground. (Table 2-6, pg. 2-26 LRMP)

The only Variety/Scenic attractiveness classification is Class A- Distinctive.

Class A – Distinctive- Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have strong positive attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

This area does not have Class B or C classifications.

The sensitivity levels for the travelways were developed by user related concerns and expectations. Landscape visibility is subject to many essential, interconnected considerations. These include:

- context and experiences of viewers
- expected images
- position of observer in the landscape
- number of people
- viewer scrutiny of the landscape caused by duration of view, viewing distance, air clarity, and visual magnitude.

The North Fork Access Project area will show the activity for any of the proposed actions. The overall VQO would not be affected in the long-term. During construction, there would be areas that would not appear to blend into the developed recreation area, but all proposed actions would improve the existing visuals from previous flooding and erosional events.

A general discussion of visual management and effects of the different types of management activities can be found in the Landscape Aesthetics “A Handbook for Scenery Management”- Forest Service-US Department of Agriculture-Agriculture Handbook Number 701, December 1995 incorporated here by reference (USDA 1995).

Forest Plan Standards and Guidelines for Visual Management

The 2005 Forest Plan (page 2-24) provides the following required standards:

- Resource management activities must meet or exceed the established VQO.
- Allow a short-term reduction, the equivalent of one VQO, for central hardwood regeneration or similarly impacting activities.
- Foreground sensitivity level 1 (fg1) or foreground sensitivity level 2 (fg2) areas must not be reduced below modification.
- Retain the original VQO for adjusted areas, and meet it within 20 years after initial entry into the corridor or viewshed.
- Residue treatment requirements must meet those specified for the original VQO.

Within fg1 and fg2 areas with a VQO of retention or partial retention:

- Mitigate negative visual impacts concurrently with or immediately after each phase or activity.
- Complete mitigating measures for each cutting unit or project area before beginning activities in the next sequential block or project area in the same corridor or viewshed.
- Complete obligations specified by a contract or a project prescription within one year from initiation of activities for any single cutting unit or project area. Emphasize completing all work within these areas in a systematic manner within the shortest practical time.

Within fg1 and fg2 areas with a VQO of modification, the standards are the same as above except the total lapsed time from initiation of activities to completion of obligations specified by a contract or a project prescription shall not exceed two years for any sale block or project area.

Table 3.4. Maximum residue treatment heights (above ground surface) for designated travelways and use areas by sensitivity levels.

Visual Quality Objective - VQO	Distance Zone	Travel Speed MPH	Sensitivity Level 1 (Mandatory)	Sensitivity Level 2 (Mandatory)	Sensitivity Level 3 (Optional)
Retention - R	Nfg (0-300')	0-10	18 inches	N/A	N/A
		11-35	24 inches		
		36-55	30 inches		
Retention - R	Secondary Zones (up to 600')	0-10	6 feet	N/A	N/A
		11-35	8 feet		
		36-55	8 feet		
Partial Retention - PR	Nfg (0-300')	0-10	18 inches	30 inches	36 inches
		11-35	24 inches	30 inches	36 inches
		36-55	30 inches	36 inches	48 inches
Partial Retention - PR	Secondary Zones (up to 600')	0-10	8 feet	10 feet	12 feet
		11-35	8 feet	10 feet	12 feet
		36-55	12 feet	12 feet	12 feet
Modification - M	Nfg (0-300')	0-10	N/A	36 inches	48 inches
		11-35		48 inches	48 inches
		36-55		48 inches	48 inches
Modification - M	Secondary Zones (up to 600')	All Speeds	N/A	12 feet	N/A
Maximum Modification - MM	Nfg (0-300')	All Speeds	N/A	N/A	48 inches
Maximum Modification - MM	Secondary Zones (up to 600')	All Speeds	N/A	N/A	N/A

2005 Forest Plan, Table 2.6, page 2-26

Direct and Indirect Effects on Visual Resources**Alternatives 1 and 2 (All Actions)**

This section describes the area of analysis for direct and indirect effects and the area evaluated for cumulative effects. The scope of the analysis will include the scenic resources within the North Fork Access Project area and potential visual quality effects from travelways within and adjacent to the area. Because the Forest provides a wide range of recreation opportunities and scenic landscapes, there are no scenery resources or recreation activities limited or specific to the North Fork Access Project area. Therefore, any analysis beyond that described above will not be necessary.

Cumulative Effects on Visual Resources***Cumulative Effects Area (CEA)*****Spatial boundary**

A one mile corridor around the North Fork Access Project area was selected as the visual resource cumulative effects boundary. This area was used because it will adequately address any effects related to vegetative

management on the scenery resources. See the Visual resource cumulative effects spatial boundary map in the North Fork Access Project file.

Temporal boundary

The temporal boundary was set to analyze 10 years prior to and 10 years after this decision. The boundary was selected because 10 years is the normal management cycle and this is the extent the effects are measurable and meaningful.

Cumulative Effects Analysis

A list of all past, present, and reasonably foreseeable actions having potential effects on visual resources within the CEA is documented below.

National Forest land actions include:

MTNF Non-native Invasive Plant (NNIP) Control Project (Decision Notice 2/14/2012). This project is designed to manage existing and future non-native invasive plant infestations on the Mark Twain National Forest, (not only in the North Fork Access Project area) through an integrated approach using a combination of chemical, manual, mechanical, and biological control methods.

Cumulative Effects Discussion

Vegetation and ground disturbing activities such as road building would be necessary to implement Alternative 2; however, there would be no long term negative impacts on any visual quality factors for the area. In fact, the proposed activities would improve the quality and quantity of most visual and recreational activities over time, such as accessing the river, picnicking, and water play.

It is important to consider the overall end result desired while at the same time maintaining the current Forest Plan direction. The visual effects of these proposed activities would be more noticeable to those visiting the river and day use area.

Irreversible or Irretrievable Commitment on Visual Resources

Neither of the alternatives would have an irreversible or irretrievable commitment on this resource in the proposed North Fork Access Project area.

Visual resource summary: There would be no significant cumulative effects of any kind on visual resources because of the limited nature and extent of the cumulative effects discussed above. This conclusion was reached after analyzing all of the above information regarding the past, present and reasonably foreseeable future activities on all ownerships within the specified spatial and temporal boundaries.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed on February 11, 1994 by President Clinton. This order states:

.....each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands (Section 1-101).

This analysis is intended to evaluate selected quantitative demographic indicators of minority populations and low-income populations of communities for purposes of assessing environmental justice. This quantitative analysis can reveal useful information about the analysis area.

It is important to note that the following demographic analysis addresses indicators to determine the presence or absence of minority and/or low-income communities in an analysis area. This analysis summarizes one key demographic indicator of minority populations and two key demographic indicators of low-income populations. While these indicators or the associated thresholds are not formally identified in federal codes and regulations, they serve as reasonable predictors of minority and low-income population status.

Affected Environment/Existing Conditions

The North Fork Access project is located in Ozark County, Missouri. It is included in the seven counties (Christian, Ozark, Taney, Barry, Stone, Douglas, and Howell) impacted by Forest Service activities conducted on the Ava/Cassville/Willow Springs Ranger District. This seven county region has experienced the largest percent of population growth (38%) since 1990 within the 29 counties containing Mark Twain NF lands (USDA Forest Service 2005). Ozark County covers 712.45 square miles and has 9,560 people residing within the county. The following table summarizes the 2013 U.S. Census Bureau estimates of general population characteristics for the county and State of Missouri (U.S. Census Bureau 2013a).

Table 3.5. Demographics of Ozark County and the State of Missouri for 2013.

Demographic	Ozark County	Missouri
Total Population	9,560	6,044,917
Gender		
Male	50.3%	49.0%
Female	49.7%	51.0%
Race/Ethnic Group		
White	97.2%	83.7%
Black/African American	0.3%	11.7%
Native American	0.8%	0.5%
Asian	0.1%	1.8%
Hispanic	1.6%	3.9%
Mixed Ethnicity	1.5%	2.0%
Age		
under 5 years old	4.7%	6.2%
under 18 years old	19.4%	23.1%
65 years old and over	25.8%	15.0%
Median household income	\$32,078	\$47,380
Persons below poverty level	20.0%	15.5%

Source U.S. Census Bureau QuickFacts at: <http://quickfacts.census.gov/qfd/index.html>.

Low-Income Population

The poverty rate is a commonly used indicator of the level of economic need in a community. The 1999 Ozark Ouachita Highland Assessment (OOHA) found that thirty-seven counties in the OOHA assessment area experienced “persistent poverty” (USDA 1999). The Economic Research Service defines persistent poverty counties as those non-metro counties with poverty rates of 20 percent or more in each census from 1970 through 2000. Ozark County was classified in the 1999 OOHA as a county that is under persistent poverty.

More recently, median household income for Ozark County in 2013 as \$32,078 while that for the entire state of Missouri was \$47,380. These income values are more than the U.S. Census Bureau, Weighted Average Poverty Thresholds for a family of 5 in 2013 (\$28,265); however, they differ from the state median household income by more than 20 percent (U.S. Census Bureau 2013b). In 2013, the poverty level in Ozark County was 20.0%, while it was 15.5% for the state of Missouri. Although this project would not impact low-income populations, this county may be considered a borderline poverty county.

Minority Population

The 2013 estimates indicated that greater than 97 percent of the population of Ozark County was White. Less than 3 percent are non-white minorities; including those who identified themselves as Black, Hispanic, Asian, Native American, and of mixed ethnicity. This is less than the state average of 15 percent and far less than the Environmental Protection Agency (EPA) threshold value of 25 percent. It is unlikely that this project would have disproportionate negative impacts on any minority population (USDA 2005).

Direct and Indirect Effects on Environmental Justice

The proposed alternatives for the North Fork Access project were evaluated to determine potential impacts to low-income and minority communities, as well as consumer, economic, and civil rights issues, including those affecting minority groups and women. The following discussion addresses potential impacts of the proposed alternative.

Alternative 1

This alternative neither adds to nor diminishes the local economy or employment opportunities and thus has no effect on low-income populations, nor does it affect minority communities.

Alternative 2

This action alternative would add to the local economy and employment opportunities for skilled and unskilled labor forces by providing:

- a) contracts for construction of the new watercraft launch site, vehicle access loop, and parking area.
- b) contracts for rehabilitation of the existing water play area, reconfiguring the existing parking area, and constructing public walkways.
- c) contracts for hydrological design and engineering of the stream bank, in-stream structures, and the overflow floodplain channel.

This alternative would supply unencumbered access to the river for commercial outfitters launching watercraft at the site. Increased efficiency may lead to increased recreational use that would provide additional opportunities for hiring local residents to operate transport vehicles, load and unload watercraft, act as river guides, etc. Improvements to North Fork Recreation Area may draw additional recreationists to the area and contribute the greater economy of Ozark County.

Cumulative Effects on Environmental Justice

Cumulative Effects Area (CEA)

This demographic analysis of the communities within Ozark County included consideration of the provisions of Executive Order 12898.

Cumulative Effects Analysis

The analysis compared demographic characteristics for the county with suggested threshold levels of concern and concluded that low-income and minority populations would not be adversely affected by either direct or cumulative effects resulting from a decision on either the proposed action or the no-action alternative.

Furthermore, a decision on these alternatives would not pose disproportionately high or adverse environmental, human health, economic or social effects on the residents of Ozark County. The analysis indicated that there is no reason to suspect that communities within these counties might fall under the provisions of Executive Order 12898.

Effects on Civil Rights of Consumers, Minority Groups, and Women

Forest Service activities must be conducted in a discrimination free atmosphere according to civil rights policy. Contract work that may be generated from a decision would include specific clauses offering civil rights protection to consumers, minority groups and women. Executive Order 12898 (Environmental Justice) calls for consideration of the environmental, health and economic effects of Forest Service projects on minority and low-income populations as part of the 1970 National Environmental Policy Act (NEPA) process. The Forest Service would make a concerted effort to enforce these policies.

Irreversible or irretrievable commitment on resources

Neither of the alternatives would have an irreversible or irretrievable commitment on minority populations and low-income populations of Ozark County.

HERITAGE RESOURCES

Affected Environment/Existing Conditions

Inventory Survey Coverage

A phased “Complete Coverage” inventory survey of the 2015 North Fork Access Project area was undertaken by Mark Twain National Forest heritage resources staff at various times between November 2011 and December 2014, as project proposals were developed and subsequently refined. These surveys were focused specifically on those areas in which North Fork Access Project activities are proposed that have the potential to affect historic properties.

Of the 10.66 acres of “Complete Coverage” cultural resources survey employed in the project area, all were inventoried specifically for the proposed undertaking (Halpern 2014).

Inventory Survey Limitations: Activity Locations Not Yet Known

Cultural resource surveys have not necessarily been completed for various activities because additional planning/adjustment may be required prior to implementation; these activities include, but are not necessarily limited to:

- Final location and extent of “log jam” erosion control features and anchor points
- Routes used by heavy equipment to convey a mechanical excavator and “log jam” timber to erosion control feature installation locations

Areas in which the above activities would take place that have not yet been surveyed for cultural resources would be surveyed and regulatory consultation completed prior to project implementation.

Previously Surveyed Areas

Although a number of cultural resources inventory surveys have been implemented within the North Fork Developed Recreation Area (FS Reports No. R1978090500028; R1987090500192; R1992090525071; R1992090525072; R2004090525134; R2005090500272), only one has extended into the currently proposed project area: shovel testing was conducted along the route of a proposed buried electrical line corridor and a pedestal/control box location as one component of the 2004 North Fork Campground Improvements Project (FS Report No. R2004090525134, by Cynthia R. Price; SHPO Log No. 009-OZ-04). Although no historic properties were identified during the 2004 linear survey, the area within which the electric line corridor fell

was resurveyed as part of the broad scale FY2015 undertaking as a matter of convenience. No historic properties were identified.

Section 106 Consultation

Regulatory consultation with the Missouri State Historic Preservation Officer (SHPO) has been carried out for the activities proposed in the FY2015 North Fork Access Project. Such consultation is required under the National Historic Preservation Act, as Amended (NHPA) and the accompanying regulations found at 36 CFR 800 with respect to the adequacy of the inventory survey in the Area of Potential Effects (APE) and the expected effects on cultural resources of the various actions proposed in the project alternatives. Formal consultation has been completed. A letter of concurrence was issued by the State Historic Preservation Officer on December 26, 2014 that concurred with the survey adequacy and “no potential to affect” determinations made with regard to project effects on historic properties, provided that mitigation measures as described in the case report are implemented as described.

Cultural Resources

Archaeological Site Information

Although no archaeological sites, historic features, or isolated finds were identified within the currently defined Area of Potential Effects for the FY2015 North Fork Access Project, two previously identified cultural resource sites have been identified in the general area and warrant brief mention here.

One of these sites, FS No. 09052500081 (23OZ205), has been described as a National Register of Historic Places (NRHP) “unevaluated” historic farmstead represented by several foundation stones that correspond to the location of a single structure visible on the 1938 aerial photograph (Photo ID BLX-6-75). As currently defined, the site is outside the North Fork project area

According to Price (2004:5), a second property, FS No. 09052500057 (23OZ115), is a large NRHP “eligible” precontact period open campsite represented by a variable density lithic scatter with temporal associations dating at least to the Archaic and Woodland Periods. Cultural materials appear to be limited to the high terrace and toeslope overlooking the North Fork River, and do not appear to extend onto the lower terrace or bottoms along the river. The site, measuring ca. 1,800 feet (northwest to southeast) along the terrace and 500 feet (southwest to northeast) from the terrace edge to the toeslope, also lies outside the primary project area.

National Register of Historic Places Significance

No NRHP “eligible,” “unevaluated,” or “not eligible” archaeological sites have been identified within the 10.66 acre FY2015 North Fork Access Project area, as defined according to the NRHP Significance Criteria outlined in 36 CFR 60.

On December 26, 2014, the Missouri State Historic Preservation Office issued a letter of concurrence with regard to the site identification efforts implemented under the FY2015 North Fork Access Project.

Direct and Indirect Effects on Heritage Resources

Definition of Effects and Area of Potential Effects

An Effect to a cultural resource is defined as "...alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." [36 CFR 800.16(i)]. An “adverse effect” is found "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." [36 CFR 800.5(a)(1); see also subsection (a)(2)]. Effects to cultural resources may be either Direct or Indirect.

The Area of Potential Effects (APE) is defined as "...the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties.... The area of potential

effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." [36 CFR 800.16(d)].

Direct effects

With respect to the FY2015 North Fork Access Project, direct effects are those that would occur during project implementation. In essence, any activity that has the potential to disturb the ground has potential to directly affect archaeological sites.

Specific activities outlined in the North Fork Access Project that have the potential to directly affect cultural resources, and therefore are considered to be undertakings for the purposes of this project, include but may not be limited to the following:

- Widening of the entrance road from CC Highway from ca. 20 feet to 24 feet to allow for two-way traffic
- Reconfiguration of parking areas
- Installation of vehicle barriers
- Walkway construction
- Vegetative plantings
- Construction of new loop road and boat launch
- Construction of "log jam" erosion control features
- Construction of overflow flood control channel
- Reconstruction of the eroded stream bank in the proposed water play area/existing boat launch location
- Installation of necessary signage, bulletin boards, and hydrants to accessible locations
- Use of routes by heavy equipment to convey a mechanical excavator and "log jam" timber to erosion control feature installation locations

The Areas of Potential Effect for the above-listed project activities are those geographic areas in which the ground disturbing activities would take place.

Activities proposed in the various alternatives that do not have the potential to affect cultural resources, and therefore are not considered undertakings for purposes of this project, include the following:

- Construction of erosion control features where disturbance is limited to the existing riverbed or recently formed gravel bars within the river corridor.

Indirect Effects

In general, project activities of the kind proposed for the FY2015 North Fork Access Project have the potential to indirectly affect cultural resources by encouraging increased visitor use to those areas of the forest in which cultural resources are or may be located. Increased visitor use of an area in which archaeological sites are located can render the sites vulnerable to both intentional and unintentional damage. Intentional damage can occur through unauthorized digging in archaeological sites and unauthorized collecting of artifacts from sites. Unintentional damage can result from such activities as establishment of user-created trails as well as from other activities, principally related to dispersed recreation, that lead to ground disturbance.

Analysis of effects by Alternative

Comparison Methods

The parameters listed below guide the discussion of the expected effects on archaeological sites by alternative. Comparisons of effects on cultural resources among the “No Action” and “Proposed Action” alternatives presented in this analysis are generally based on the presence of archaeological sites within the Area of Potential Effects that could be affected by the proposed activities.

Parameters

- (1) Only those activities proposed in the various alternatives that are defined as undertakings, as listed above in *Definition of Effects and Area of Potential Effects*, are used in this analysis.
- (2) Sites considered in this analysis include **only** those sites within the APE that are considered unevaluated (or eligible) with respect to National Register significance.

Alternative 1

Although no archaeological sites have been identified within the 2015 North Fork Access Project area to date, erosional forces with the potential to affect such sites, were they to be found deeply buried beneath strata observable through standard shovel testing, are constantly altering the riverbank within the project area. While these are considered natural forces, proposed stabilization of the river corridor in the project area through erosion control has potential to reduce the effects of erosional forces on previously unrecorded historic properties.

With no change in current management activities and direction, the potential for adverse effects to unrecorded historic properties due to uncontrolled erosion within the North Fork Access Project area would continue unabated.

Alternative 2

Project components that have potential to directly affect archaeological sites in this group are listed above, under *Definition of Effects and Area of Potential Effects*, and include various erosion control and recreation area improvement activities.

The Mark Twain National Forest believes that potential adverse effects to cultural resources resulting from FY2015 North Fork Access Project activities can be mitigated **provided appropriate measures are properly applied**. In that instance, project activities are not expected to adversely affect archaeological sites and the effects on cultural resources of project activities would be as follows:

In those project areas where no historic properties are present, the proposed project activities have “**no potential to affect**” cultural resources.

Cumulative Effects on Heritage Resources

Because there are not expected to be any adverse effects to historic properties as a result of FY2015 North Fork Access project activities, there are not expected to be any cumulative adverse effects to cultural resources. There are, however, opportunities in the proposed alternative to provide for long-term beneficial effects to previously unrecorded archaeological sites.

Irreversible or irretrievable commitment on resources

Neither of the alternatives would have an irreversible or irretrievable commitment on the heritage resources in the proposed North Fork Access Project area.

ENVIRONMENTAL EFFECTS SUMMARY

This section summarizes the environmental effects of implementing either Alternatives 1 or 2. Table 3.17 (below) provides a summary of effects for each alternative on the resource areas examined in this chapter.

Table 3.6. Summary of environmental effects from project alternatives.

Resource	Alternative 1	Alternative 2
Soil	Possible negative effects from soils erosion due to existing river access and watercraft launch site which would be left in place.	Activities unlikely to produce sufficient long-term impacts to the soil resource to move the project area into a detrimentally disturbed condition.
Hydrology	The recreation site would continue to degrade the stream channel and associated downstream aquatic habitat.	Stream morphology and hydrology would be improved while sedimentation and gravel mobilization would decrease.
Wildlife	Riparian foraging habitat would not be altered, however, over time excess sediment would continue to degrade water quality and may affect aquatic prey species populations and habitat, diminishing food supplies downriver of the project area.	Roosting/nesting habitat would be removed in a small area but would still be available within and adjacent to the project area. Large wood structures would aid in improving water quality and riparian habitat for aquatic prey species.
T&E Species	Over time, sediment from the site and upstream sources, would continue to degrade water quality and may affect aquatic prey species populations and habitat.	The potential for adverse impacts are remote and considered discountable.
RFSS Species	This alternative “may impact, not likely to adversely impact”. There would likely be no cumulative effects to the RFSS species	This alternative “may impact, not likely to adversely impact”. The project would likely maintain and enhance aquatic habitat for RFSS species occurring in the area.
Recreation	User safety would remain the same or decrease. User satisfaction would decrease over time.	User safety would increase with separate watercraft launch and water play areas. User satisfaction would increase over time.
Visuals	There would be no effect to VQO. Visual variety would remain the same.	There would be no effect to VQO. Visual variety would remain the same.
Heritage	The potential for adverse effects on archaeological sites may continue.	No adverse effects are expected where mitigation measures are followed.
Environmental Justice	Implementation likely would have no effect on low-income or minority populations.	Implementation likely would provide a positive economic effect on low income populations and likely would not impact minority populations.

MONITORING

Monitoring in regard to Forest Plan Standards and Guidelines would be carried out according to Chapter 4 - Monitoring and Evaluation of the 2005 Forest Plan and the Monitoring and Implementation Guide. Chapter 4

of the Forest Plan is strategic in nature and provides programmatic direction for monitoring and evaluating Forest Plan implementation. The Monitoring Guide details the methodologies and protocols used to conduct monitoring and evaluation tasks identified in the 2005 Forest Plan for the Mark Twain National Forest. The monitoring guide also assigns responsibilities for monitoring and evaluation tasks, and defines where monitoring data is to be stored. The District Ranger is responsible for ensuring that monitoring trips are conducted each year. The North Fork Access Project area would be examined on seasonal monitoring trips for several years after the onset of project implementation.

CHAPTER 4 – CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, state and local agencies and non-Forest Service persons during the development of this environmental assessment.

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