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Final Environmental Assessment

Wedington Restoration Project

**Ozark-St. Francis National Forest
Boston Mountain Ranger District
Wedington Unit**

Benton and Washington Counties Arkansas

**Responsible Official
William Dunk
District Ranger
Boston Mountain
Ranger District**

**For Information Contact:
Boston Mountain Ranger District
1803 North 18th St
Ozark, AR 72949
479-667-2191**

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TABLE OF CONTENTS

1.0 PURPOSE AND NEED FOR ACTION.....	4
1.1 INTRODUCTION.....	4
1.1.1 DESCRIPTION OF THE AREA	5
1.1.2 DESCRIPTION OF THE PROPOSAL (ALTERNATIVE 1)	8
1.2 PURPOSE AND NEED	11
1.3 SCOPING	15
1.5 KEY ISSUES CONSIDERED	15
2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION.....	16
2.1 INTRODUCTION.....	16
2.2 ALTERNATIVES CONSIDERED	16
2.2.1 ALTERNATIVE 1 – PROPOSED ACTION	16
2.2.2 ALTERNATIVE 2 – NO ACTION	16
2.3 MANAGEMENT REQUIREMENTS & MITIGATION MEASURES (DESIGN CRITERIA)	16
3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	18
3.1 BIOLOGICAL RESOURCES	18
3.2 SOILS AND WATER.....	42
3.3 RECREATION AND SCENERY RESOURCES	46
3.4 FOREST HEALTH AND TIMBER MANAGEMENT	51
3.5 AIR QUALITY	52
3.6 MINERALS	55
3.8 SAFETY AND HUMAN HEALTH.....	56
3.9 HERITAGE RESOURCES	57
3.10 ENVIRONMENTAL JUSTICE AND CIVIL RIGHTS.....	58
3.11 ECONOMICS	58
4.0 LIST OF PREPARERS AND AGENCIES/PERSONS CONSULTED	59
5.0 REFERENCES.....	60
APPENDIX A. SUBWATERSHEDS ASSOCIATED WITH THE WEDINGTON UNIT ...	70
APPENDIX B. PROPOSED RECREATION TREATMENTS	71
APPENDIX C. PROPOSED TIMBER AND WILDLIFE TREATMENTS.	72
APPENDIX D. HERBICIDES	73
GLOSSARY.....	77

LISTS OF TABLES AND FIGURES, INCLUDING MAPS

FIGURES, INCLUDING MAPS

Figure 1 - Vicinity Map	4
Figure 2 - Management Areas in the Wedington Unit.....	7

TABLES

Table 1 - Management Area Descriptions for the Wedington Unit.....	6
Table 2 - Resource Elements, Existing Condition, Desired Future Condition, and Proposed Action.....	12
Table 3 - MIS Species, Habitat Requirements and Population Trends.....	21
Table 4 - Historical TES species and status on the Wedington Unit	30
Table 5 - Current TES species and status on the Wedington Unit.....	31
Table 6 - Subbasins of the Wedington Unit.....	43
Table 7 - Prescribed Burning Emissions for Alternative 1	54

1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Boston Mountain Ranger District of the USDA Forest Service is proposing land and resource management activities on lands of the Ozark National Forest referred to as the **Wedington Restoration Project**, in Benton and Washington Counties, Arkansas (see map below).

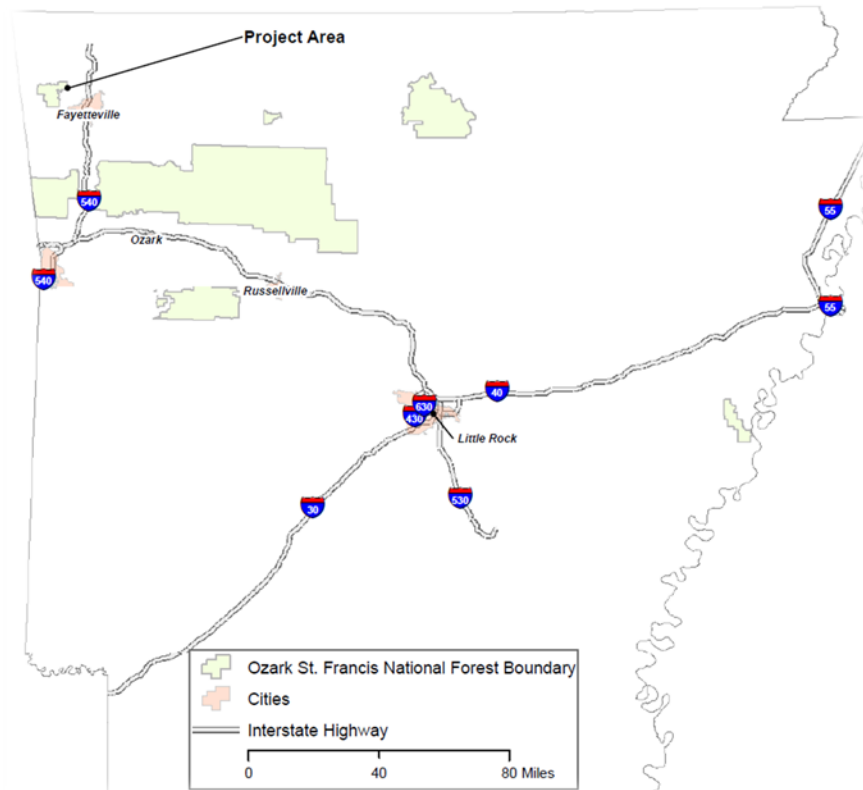


Figure 1 - Vicinity Map

This Final Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4347, January 1, 1970) and other relevant federal and state laws and regulations. The EA discloses the direct, indirect, and cumulative impacts that would result from the proposed action, and alternatives to the proposed action. The document is organized into six sections:

1.0: Purpose and Need for the Action: This section includes detailed information about the project proposal, the purpose and need for the project, the Forest Service's proposal that addresses the purpose and need, and a summary of the public involvement process.

2.0: Comparison of Alternatives: This section provides alternatives to the proposal. The section also includes design criteria, or measures that are taken to prevent potential adverse effects of an action.

3.0: Affected Environment and Environmental Consequences: In this section the potential environmental impacts of each of the alternatives are examined. The section is organized by the environmental resource being examined.

Throughout the Environmental Assessment there are references to activity area, project area and analysis area.

- **Activity area** is used to describe just those acres where activities will occur. For example, the thinning activity area includes all areas totaling 947 acres.
- **Project area** is the Wedington Unit of 17,057 acres.
- **Analysis area** is used to describe the area of influence of an activity for a particular resource. This varies depending on the resource being discussed. For example, the analysis area for aquatic species effects analysis would include the **analysis area** waters and the waters downstream that might be impacted by project activities. The maximum analysis area considered is the Wedington Unit Watershed Analysis Area (Appendix A), with 17,057 acres of Forest Service lands within its boundaries.

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

5.0: References: This section provides a list of references and data sources used in the analysis.

6.0: Appendices: The appendices include larger maps with more detail and other information used to support the analysis presented in the EA.

1.1.1 DESCRIPTION OF THE AREA

The project area consists of approximately 17,057 acres of the entire Wedington Unit. The area is readily accessible to publics in northwestern Arkansas such as Fayetteville and Springdale.

State Highways 16, 412, Benton County Road 39 and Washington County Road 33 provide primary access into and out of the analysis area. State Highway 16, a 2-lane highway, connects to Fayetteville to the east and Siloam Springs to the west. State Highway 412, a four-lane highway with turning lanes, connects to Springdale to the east and Siloam Springs to the west. Benton County Road 39 (Chambers Hollow Road) connects to State Highway 16 to the south and State Highway 412 to the north. Washington County Road 33, a 2-lane paved road, connects to State Highway 16 to the north and the community of Lincoln to the south.

Other County Roads providing access within the project area include Benton County 103, 104, and 105; and Washington County 82, 848, 851, and 874.

Forest Service Roads 1743, 1749, 1752, 1754 and 1755 provide direct access into the project area. These are single lane roads some of which have site distance problems, exposed rock, or areas with poor drainage. They receive routine general maintenance once or twice a year. The powerline right-of-way from the Tower Road (FSR 1743) to the Illinois River (east) has been used extensively by off road vehicle users.

Forest Service Roads 1744, 1744A, 1744B, 1750, 1750A, 1750B, 1750B1, 1750C, 1750D, 1750E, 1750F, 1750G, and 1750H are within the Wedington Lake Recreation area. These roads are primarily single lane paved roads in good condition. They are seasonal roads that may be gated after the recreation season and used for administration and repairs at the lake.

Management Areas

National Forest lands are assigned different administrative units called Management Areas (MAs). Each MA has unique goals allocated to it by the Revised Land and Resource Management Plan (RLRMP or Forest Plan) for the Ozark-St. Francis National Forests along with appropriate management direction and standards to achieve these goals. The Wedington Unit contains the following management areas.

Table 1 - Management Area Descriptions for the Wedington Unit

Management Unit	Description	Acres
<i>Developed Recreation Area</i>	Recreational opportunities provided in visually appealing and environmentally healthy settings. No timber production unless justified.	414
<i>Urban Recreation Area</i>	Managed as an urban forest with a recreational emphasis (similar to developed recreation area). Closed to OHV use. Timber production appropriate.	10,467
<i>Special Interest Area</i>	North Twin SIA – has unique botanical, zoological, and scenic qualities.	1,219
<i>Pasture/Opening</i>	Provides permanent forage and cover for livestock and wildlife. Unsuitable for timber production.	*3,212
<i>Riparian Corridor</i>	Includes both terrestrial and aquatic ecosystems. Managed to retain, restore, and enhance ecological processes and functions of corridor as travel-way for aquatic and terrestrial organisms.	1,745

*Actual acreage is 3510 because some openings overlap other management areas.

Figure 2 displays the different management areas in the Wedington Unit Project Area.

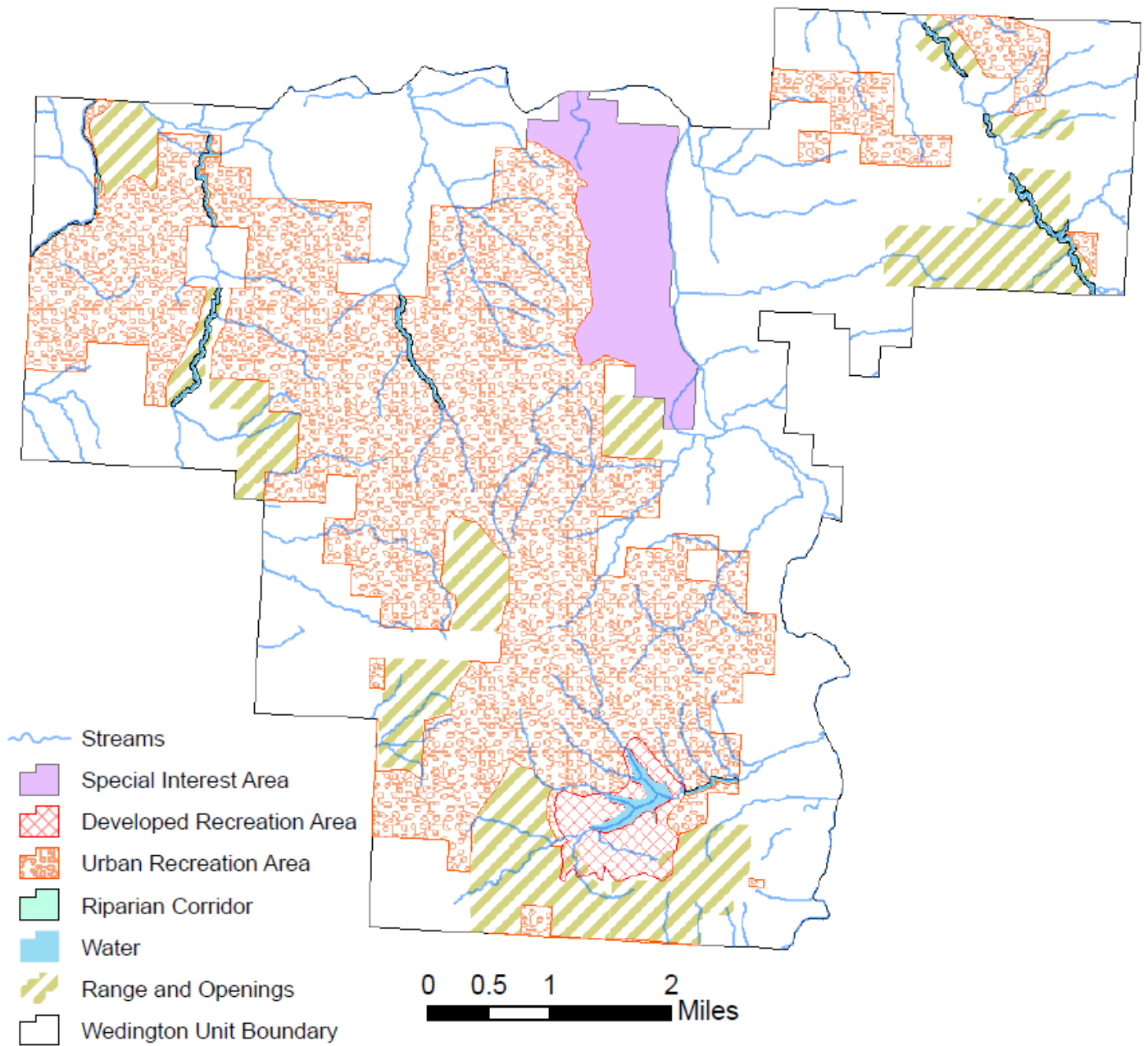


Figure 2 - Management Areas in the Wedington Unit

1.1.2 DESCRIPTION OF THE PROPOSAL (ALTERNATIVE 1)

It is projected that the management activities would start in 2012 and take five to ten years to complete. Activities being proposed include:

WILDLIFE

- Install ten mobile wheelchair accessible hunting blinds throughout the entire Wedington unit to allow mobility impaired hunters to have a quality hunting experience.
- Construct two wildlife viewing platforms (wheelchair accessible) at Lake Wedington and in the small game area. Install interpretive signs along the lake trail at Lake Wedington and along the Tower trail.
- “*Energy for Wildlife*” Habitat: Work cooperatively with National Wild Turkey Federation, Southwestern Electric Power Corporation, and American Electric Power to improve powerline right of way openings for wildlife habitat. Plant/encourage native grass establishment in the powerline right-of-way running along Tower road and east of Tower road in Sections 22, 23, 27, and 28, T 17N, R 32W. Activities may include one or more of the following: planting of native warm season grasses, wildlife forages, and wildflowers; maintenance of right-of-way corridors through prescribed burning, brush hogging and/or mowing; herbicide spot treatments of non-native invasive plants; planting of native brush/shrubs on the edges; wildlife stand improvement thinning along the adjacent forest to attract wildlife including migratory birds (approximately 250 acres).
- *Small wildlife openings*: Eradicate non-native invasive species and deter woody encroachment on openings through mechanical or herbicide treatments. Plant forest-approved wildlife forages, and native grass species. Other activities may include liming, fertilizing, and disking. Maintenance activities may include prescribed burning, herbicide spot spraying or brush hogging (Approximately 20 acres).
- Eradicate fescue, privet, multi-flora rose, serotia lespedeza and other non-native invasive species.
- Establishment of native grasses, wildflowers, and trees in the Lake Wedington Recreation area and along Highway 16, section 4, T 17N, R32W, north and south sides of the highway (approximately 20 acres). Kudzu was previously sprayed here which has left bare areas devoid of vegetation and areas where other invasives have replaced the kudzu. Activities may include: planting of native grasses wildflowers, trees or shrubs; prescribed burning; and/or spot spraying with herbicide as needed.
- No more than 1000 acres would be sprayed for various herbicide-related treatments in the course of a year.

FISHERIES

- Add large woody debris to area streams as needed to increase pool/riffle ratios and to increase habitat for many aquatic communities.
- Fence range allotments to exclude cows from riparian areas. Install stock tanks with pumps where needed.
- Construct one pond, ½ acre in size, in Wedington #4 allotment for cattle watering.

- Construct/reconstruct gates, vehicle barriers and support structures at the Small Game Area, Chambers boat launch and the Odell tract to protect watershed resources.
- Improve fisheries on Lake Wedington by providing fish structure and fertilization /liming of lake as needed.
- Eradicate a non-native invasive plant species: yellow floating heart on Lake Wedington using aquatic herbicide as needed.
- Maintenance of Lake Wedington dam: Debris removal through mechanical methods, prescribed burning, and/or herbicide applications.
- Removal of largemouth bass from Lake Wedington to prevent overcrowding and stunting as surveys indicate the need.
- Install an interpretive sign with a wash station at the Lake Wedington boat ramp to discourage the spread of non-native invasive species.
- Replace the existing docks at Lake Wedington with wheelchair accessible docks.

LARGE OPENINGS/PASTURES

Refer to Appendix C for locations of openings.

- Treatments may include one or a combination of the following: Herbicide treatment to remove fescue, woody encroachment or other non-native invasive species; prescribed burning; planting of native warm season grasses, wildlife forages, and/or wildflowers; planting of native soft mast shrubs/trees to break up the fields and to provide cover, foraging, and nesting habitat for wildlife; brush hogging; fertilizing and liming as needed; hay removal; native seed harvesting; fence construction/maintenance and fence removal.
- If an allotment is removed from the grazing system, it may be utilized for hay cutting or sprayed with herbicide to remove the fescue and planted in native grasses, wildlife forages, and/or wildflowers.
- *Wildcat range allotments 1, 3, 4, 5 and 6; Range allotments: 8, 9, 11, 12, and 16.* Continue the existing cattle allowance for each allotment.
- *Range allotments 7 and 10:* These have been sprayed with herbicide and planted in native warm season grasses. These allotments are currently inactive and cattle grazing would no longer be permitted. Activities for these areas may include the same as those proposed for the other openings.
- *Wedington #13 and Fort Smith Land Exchange pastures:* Eradicate non-native invasive species and plant in native grasses, forest-approved wildlife forages and wildflowers. Plant native hard and soft mast tree species for wildlife habitat forage and cover. Maintenance activities as described above.
- *Wedington Small Game Area & Odell Tract:* Eradicate non-native invasive species and woody encroachment. Maintenance activities as described above.

RECREATION

See Appendix B for locations of activities proposed at Lake Wedington.

- Develop a trail management plan for the Wedington Unit.
- Develop gravel parking lot (approximately ½ acre) on west side of lake. Improve parking north of lake and obliterate parking lots off Highway 16 and on the east side of lake south of cemetery.

- Trail reconstruction and improvements around the lake, clearly designate segments as foot traffic only, bike use allowed, and/or handicap access.
- Installation of new fishing piers.

TIMBER

Refer to Appendix C for locations of timber treatments

These actions are designed to help in stimulating vigorous growth in trees. This aids in carbon sequestration which occurs at a higher rate when trees are allowed to grow unhindered by competition.

Wildlife/Timber Stand Improvement (WSI and TSI) – (approximately 12,602 acres): Thins the hardwood stands by removing fast-growing early successional tree species in the understory and midstory creating gaps in the canopy to allow sunlight to reach the ground. The goal is to favor mast producing species and herbaceous vegetation on the ground that is beneficial to wildlife. Chemical methods and/or prescribed burning would help maintain a clean understory and promote herbaceous vegetation. WSI and TSI improvements would be accomplished using chainsaws, hand tools, or conventional ground-based equipment and would favor white oak, northern red oak, ash, and hickory.

Thinning - (approximately 947 acres): Thinning the pine stands would remove less vigorous trees to reduce competition between remaining trees. This would increase growth and vigor of the remaining trees and increase their resistance to disease and insects. Thinning these stands would also increase the amount of sunlight reaching the forest floor and improve conditions for ground level plants such as bluestem grasses and forbs. We would use prescribed burning as needed to maintain the open understory. We may create up to 8 miles of temporary roads to facilitate timber operations which would then be closed and re-seeded.

PRESCRIBED BURNING

We propose prescribed burning as a management tool in timber, wildlife, recreation, and ecosystem enhancement activities to provide and enhance species habitat and wildlife viewing opportunities, reduce fuel buildups, and control non-native invasive vegetation and pests. Prescribed fire enhances the character of the urban forest by creating a more open setting that is aesthetically pleasing. Other benefits to the Wedington Unit would include stimulation of nutrient recycling: by increasing the amount of sunlight reaching the forest floor growing conditions would improve for small herbaceous plants, increasing browse and soft mast production for wildlife.

The entire Wedington Unit would be subject to periodic prescribed burning as conditions warrant the need. Not all of these areas would be burned at one time. We may create up to 10 miles of fire line to aid in control of these burns. Protection measures for the controlled burns include burning within Forest Service guidelines and protecting travelers on major forest roads from reduced visibility due to smoke. The areas would be monitored after burning by Forest Service personnel to assess the effectiveness of the prescribed burns.

1.2 PURPOSE AND NEED

The purpose of this project is to improve the existing conditions of the watershed, recreation areas, timber resources and wildlife habitat within the Wedington Restoration Project Area, all in compliance with Forest Plan goals, objectives and direction. The proposed activities are needed to move this vicinity of the Forest toward the desired conditions established in the Forest Plan. Direction in the Forest Plan reads, in part, “... *(Provide) a stable and sustained flow of habitat conditions, recreational settings, and timber products.*” (Forest Plan, p. I-19).

WILDLIFE/FISHERIES/OPENINGS AND PASTURES

- The existing docks at Lake Wedington are in disrepair and need to be replaced.
- Lake Wedington is infested with yellow floating heart, an invasive non-native aquatic plant.
- Largemouth bass in Lake Wedington are stunted due to overcrowding.
- Vandalism has occurred in the small game area (designated as a wildlife viewing area), Chambers boat launch, and the Odell tract.
- Many areas are infested with non-native invasive species such as privets, kudzu, sericea lespedeza, and multiflora rose.
- Tree encroachment, especially eastern red cedar on openings is threatening to change the character of these special habitats
- There is a need for more access to hunting and other activities for an increasingly less mobile and older public.
- The grazing allotments need to be evaluated and maintained in conjunction with wildlife habitat and watershed enhancements.

RECREATION

- Portions of the trail along Lake Wedington are eroding into the lake and are in need of repair and/or relocation.
- Additional trail-related recreation opportunities are needed.

TIMBER

- The Wedington Unit is over stocked with poor quality hardwood trees of early successional species, growth of slower growing trees has become stagnant, and there is a scarcity of understory herbaceous vegetation.

Table 2 - Resource Elements, Existing Condition, Desired Future Condition, and Proposed Action

Resource Element	Existing Condition	Desired Condition	<i>Proposed Action</i>
Recreation/ Roads	<p>All open roads are in need of additional maintenance as well as closed roads which would be temporarily opened for before timber harvest activities and resource management.</p> <p>Illegal user created roads and trails continue to be a problem on the landscape.</p>	<p>Roads and trails are safe, affordable, and environmentally sound. The roads system responds to public needs and is efficient to manage. The system is well maintained proportionate with levels of use and available funding. Unnecessary roads and trails are removed and the landscape restored. Right-of-ways are issued to access National Forest System lands to satisfy public needs and facilitate planned resource activities.</p>	<p>Perform routine general road maintenance of open roads, including road grading, roadside brushing, add or replace information and general warning signs, gravel replacement, add additional culvert and replace failing culverts as needed and as funding become available. Repair or replace and maintain existing gates as needed on closed roads. Open and maintain selected closed roads for resource management activities as needed and re-close after activities are completed. Decommission illegal user created roads and trails.</p>
Recreation	<p>Lake Shore Trail is disconnected and in need of trail repair.</p> <p>Scenery, wildlife viewing opportunities are limited.</p>	<p>Plenty of quality hiking opportunities.</p> <p>Plenty of scenic areas and wildlife viewing opportunities.</p> <p>Forest community is open, diverse and scenic.</p> <p>Forest visitation is greater than in the past.</p>	<p>Improve and complete Lake Shore Trail.</p> <p>Implement wildlife and vegetation management activities to achieve desired conditions.</p>

Resource Element	Existing Condition	Desired Condition	<i>Proposed Action</i>
Fish and Wildlife	Woody vegetation and non-native invasive species (NNIS) are encroaching on pastures, openings and utility right-of-ways resulting in poor quality wildlife habitat.	Pastures and openings have little woody encroachment. Pastures provide optimal forage and cover for livestock and wildlife species.	Spray with herbicide to kill woody encroachment and NNIS. Utilize mechanical and prescribed burning methods to maintain areas. Plant in native grass and forb species.
Wildlife viewing/ hunting	Access for mobility impaired hunters and wildlife viewing is extremely limited in the project area.	High quality outdoor recreational opportunities are plentiful while natural resources are sustained. Handicapped accessible opportunities on the Forest are adequate.	Install portable, mobility impaired accessible hunting blinds throughout the area and implement a permit system.
Water and Soils	Fences/gates in the Odell Tract, Small Game Area and Illinois River boat launch have been cut or torn down. Vehicular traffic is evident in the riparian areas.	Riparian corridors reflect the physical structure, biological components, and ecological processes that sustain aquatic, riparian and associated upland functions and values.	Reinstall gates, fences, and other barriers to impede vehicle traffic.
Timber Management	Hardwood stands are overstocked restricting sunlight from reaching the forest floor, oldest age classes of hardwood stands are suffering from oak decline.	Healthiest trees are retained in the stands with space to grow and flourish. Ample light and space is provided in the understory for seedling and sapling development.	Thinning, WSI and TSI treatments.

1.2.1 DECISION TO BE MADE

The decision to be made is to approve the management activities as proposed, defer all activities until another time, require additional information from the Interdisciplinary Team if the information presented is not adequate to make a decision, or require the development of an Environmental Impact Statement or other NEPA Document.

1.2.2 RELATIONSHIP TO OTHER LAWS AND REGULATIONS

The Multiple-Use Sustained Yield Act of 1960 directs the forest to produce and maintain a sustainable supply of timber in perpetuity.

Under the National Forest Management Act (NFMA) regulations, selection of management indicator species (MIS) during development of forest plans is required. MIS are selected because their population changes are believed to indicate the effects of management activities. They are used during planning to help compare effects of alternatives and as a focus for monitoring. Where appropriate, MIS represent the following groups of species (36 CFR 219.19 [a][1]):

- Threatened and endangered species on state and federal lists
- Species with special habitat needs
- Species commonly hunted, fished or trapped
- Non-game species of special interest
- Species selected to indicate effects on other species of selected major biological communities.

The Federal Lands Recreation Enhancement Act (REA) was passed into law as part of the 2005 Consolidated Appropriations Act (Public Law 108-447) on December 8, 2004. The REA authorizes the Forest Service and four Department of the Interior agencies to repair, improve, operate, and maintain recreation sites and areas to quality standards and to enhance the delivery of recreation services to quality standards.

Federal policy on OHV use was established by Executive Order 11644 (1972) and amended by Executive Order 11989 (1977). These orders established policies and provided procedures to ensure that the use of off-highway vehicles on public lands would be controlled and directed so as to protect the resources, promote the safety of all users, and minimize conflicts among various uses.

On November 9, 2005, the Forest Service published a final rule in the federal register (36 CFR 212, 251, 261, 295) that requires the designation of roads, trails, and areas that are open to motor vehicle use. The forest published the motor vehicle use map in January 2007 pursuant to 36 CFR 212.51 showing roads and trails designated for motor vehicle use. The forest has provided information on the types of vehicles that are allowed on various roads and any seasonal restrictions that may apply. All cross-country OHV travel has been ended. This is a necessary action in order to provide for the long-term protection of the national forest resources while continuing to provide recreational opportunities desired by the public.

The Clean Air Act requires the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for six pollutants considered harmful to public health and the environment: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The standards were set at the level required to provide an ample margin of safety to protect the public health.

Any identified wetlands in the project area as defined by Executive Order 11990 (Wetland Protection), and Section 404 Regulations of the Clean Water Act will be protected.

1.3 SCOPING

Scoping is defined by the National Environmental Policy Act as “*an early and open process for determining the scope of issues to be addressed, and for identifying the issues related to a proposed action.*” Scoping continues throughout project planning and analysis.

The Project was listed in Schedule of Proposed Actions. In March 2011 a “scoping” letter and activity map was posted on the Ozark-St Francis National Forests website.

We received seven comments on the proposed actions. The comments dealt with free ranging feral hogs, concerns about prescribed burning, and unmanaged OHV use. These concerns are addressed in this assessment. The comments and Forest Service responses are a part of the project file and may be viewed at the district office.

1.4 APPEAL OPPORTUNITIES

Only those persons who responded during the comment period for this project have legal standing to appeal the decision pursuant to 36 CFR 215.11.

Appeal opportunities are described in detail in the decision notice. The appeal period will last for 45 days beginning the day after the legal notice of the decision is published in the *Times Record*.

1.5 KEY ISSUES CONSIDERED

The key issues associated with this project were identified through a public “scoping” process, which included input from Forest Service specialists, other government agencies, and private individuals. A Forest Service Interdisciplinary Team (ID Team) reviewed the comments received during the scoping period and determined that there were no issues that could not be addressed through project design or mitigation measures, and therefore no alternatives to the proposed action were developed to respond to issues that were identified in the scoping process.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This section presents a detailed description of the alternatives. These alternatives were developed by the Interdisciplinary Team of specialists in response to issues and opportunities identified in the area.

2.2 ALTERNATIVES CONSIDERED

2.2.1 ALTERNATIVE 1 – PROPOSED ACTION

Refer to section 1.1.2 for a full discussion of Alternative 1.

2.2.2 ALTERNATIVE 2 – NO ACTION

This alternative proposes no activity that would move the area toward the desired conditions described in the Forest Plan. No resource activities would be carried out. Routine management outside the scope of the proposed action would continue at the present level including road maintenance, fire protection, and law enforcement.

2.3 MANAGEMENT REQUIREMENTS & MITIGATION MEASURES (DESIGN CRITERIA)

The action alternative would be designed to reduce adverse impacts in riparian habitats, including both direct and indirect effects resulting from damage to vegetation, increased erosion, increased sedimentation, and disturbance.

DESIGN STANDARDS

For Alternative 1, applicable standards and guidelines in the Revised Ozark-St. Francis Land and Resources Management Plan (RLRMP), the mitigation measures and management requirements of the Trails Management Handbook (FSH 2309.18), and the Best Management Practices (BMP) Guidelines for Water Quality Protection (Arkansas Forestry Commission 2002) would be applied as appropriate for this project.

Some of these standards and guidelines applicable to this project are summarized below. This list is not all-inclusive. The above documents should be referenced for a complete list.

Soil and Water Resources

Soil productivity would be protected by disking, seeding, and fertilizing roads (including firelines and temporary roads).

Water quality would be protected by retaining filter strips of vegetation along all perennial streams and springs. This zone would be 50-150 feet on either side of stream channels; at least 50 square feet of basal area would be retained within this zone.

Wildlife den trees would be retained as well as six standing dead snags per acre when available.

Heritage Resources

Heritage resources consideration has been given to all areas where site-disturbing activities are proposed. Findings are discussed in the Heritage Resources Section of this EA. Any other sites found during implementation of this project would be examined and necessary mitigation measures prescribed by the Forest Archaeologist (RLRMP, pp. 4-6).

Prescribed Burning

The following mitigation measures are found in the Final Environmental Impact Statement (FEIS) for the RLRMP, pages 3-50 to 3-69:

- a. Prescribed burns would follow an approved burning plan for each specific project. This plan includes smoke management to comply with air quality regulations and protect visibility in smoke sensitive areas.
- b. Coordination with neighboring Districts and Fire Dispatch regarding planned ignitions, and analysis of transport winds and mixing heights would be utilized to avoid smoke impacts to major metropolitan areas downwind.

Herbicide Use

The environmental analysis considered the effects of herbicide application on human, wildlife and aquatic populations. The Forest Plan, Forest Wide Standard FW21 (RLRMP page 3-4) requires that herbicides be applied at a level that minimizes the risk to human or wildlife/aquatic health. This analysis used *Human Health and Ecological Risk Assessment Final Report* prepared for the Forest Service by Syracuse Environmental Research Associates, Inc (SERA 2003a). The analysis is documented in the Project File (USDA 2011b). For further information see Appendix D of this document.

MONITORING

All activities would be monitored to ensure mitigation measures are applied.

Applicable RLRMP monitoring and evaluation requirements (Table 5-1 of the RLRMP) would be implemented as directed within budgetary limitations. These requirements include measures to monitor current and past activities in terms of implementation, effectiveness, and validation monitoring levels.

The effectiveness of BMPs and other measures would be monitored to ensure compliance with the Forest Plan and Clean Water Act. The monitoring program would measure the success of BMPs and help improve future mitigation methods. The monitoring program would also identify unforeseen problems that require remedial measures. This monitoring would involve field measurements and inspections.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The analysis in this document tiers to the Final Environmental Impact Statement (FEIS) for the Land and Resource Management Plan for the Ozark-St. Francis National Forests.

3.1 BIOLOGICAL RESOURCES

For the purpose of the terrestrial wildlife habitat analysis, the analyzed area is the project area of approximately 17,057 within Benton and Washington Counties, Arkansas.

Existing Conditions - Terrestrial Habitat

Wildlife, fish and plant species and their habitats in the analysis area are managed in cooperation with the Arkansas Game and Fish Commission and the Arkansas Natural Heritage Commission. The state wildlife management agencies' main responsibilities are to set policy for hunting and fishing regulations and law enforcement programs. The Natural Heritage Commission is responsible for collecting and maintaining information on rare plants, animals and natural communities in Arkansas. The Forest Service is responsible for managing fish and wildlife habitat conditions. The following discussion focuses on the habitat conditions that support wildlife populations and fisheries.

Game animals include white-tailed deer, black bear, eastern wild turkey, raccoon, bobwhite quail, eastern cottontail rabbit, and fox and gray squirrel. Available data for these species show that the numbers of most have increased or remained stable since 1970 except for bobwhite quail populations which are down slightly from 1970 levels. Deer populations have increased since 2000, especially within the Wedington Wildlife Management Area (USDA 2008b).

The resident winter bird community is made up of about 23 species and the breeding (spring/summer) bird community has about 62 species. The bald eagle is a frequent winter visitor to the watershed, particularly on Lake Wedington and along the Illinois River.

Reptiles common to this region include: cottonmouth snake, copperhead snake, box turtle, broad-headed skink, five-lined skink, fence lizard, and snapping turtle. Amphibians include the, Oklahoma salamander, grotto salamander, cave salamander, western slimy salamander, Ozark zigzag salamander, wood frog, spring peeper, chorus frog, green frog, bullfrog, gray treefrog complex, narrow mouth toad and American toad.

Predominately hardwood and some pine forestland provides habitat for interior forest species. The large amount of private lands in the area, most of which are in agricultural production (typically pastures), provide edge habitat and to some degree early seral habitat for some species. Agricultural lands are often poor early seral habitat because of monocultures of vegetation and/or lack of native vegetation. Approximately 22 wildlife openings have been constructed throughout the project area, averaging 2 to 5 acres each. There are approximately 500 acres in large openings. Wildlife openings are typically maintained in early seral conditions on a 2-3 year maintenance schedule. These openings have typically been planted with a mix of clover, wheat, ryegrass and other forage or browse type plants.

Approximately 130 acres of pastures have been planted in native grasses and are maintained through prescribed fire. The remaining 3,082 acres of fields in the project area are planted in

fescue and serve as cattle grazing allotments. Fescue is a non-native invasive species (NNIS) harmful to wildlife, particularly deer. Fescue contains an endophytic fungi (*Neotyphodium coenophialum*), which can cause digestion problems (fescue toxicosis) in deer (USDA 2007). Habitat is fair to poor due to the presence of NNIS but good in the riparian corridors.

The majority of the area is composed of mature mixed hardwood forest with closed canopies and some shortleaf pine. This has created sub-standard habitat for many wildlife species. Habitat for species such as the wild turkey, black bear, small mammals, some neotropical migratory birds and many early successional dependent species is lacking in forested areas.

Changes in vegetative composition lead to changes in terrestrial species habitats. A primary change is increasing mature closed-canopy forestland with high tree density. The understory is dominated by shade-tolerant plant species. This type of habitat is beneficial to interior forestland fauna. Biodiversity is probably minimal due to the limited habitat diversity. Habitat for birds, such as the bobwhite quail, is now limited because of fire suppression, woody encroachment, and agricultural land uses.

Many areas that were historically savannas or even grasslands are now forested. This is a result of a lack of natural disturbances, particularly fire. Fire scar data and historic records indicate a much higher fire return interval than exists today. Species dependent upon early seral habitat, such as grassland birds, deer, and some small mammals, may be declining on forest service land. Private lands do not provide adequate early seral habitat because of intense agricultural uses and improved (non-native grasses) pastureland. Openings, some native grass pastures and food plots on federal lands have added to the limited early seral habitat.

One of the ramifications of very dense, mature oak stands in this area has been massive oak mortality. In the short-term, snag and slash dependant species benefit from these conditions. Oak regeneration has been minimal and succession would eventually create a forest dominated by shade intolerant red maple and black gum. Some species would benefit but the majority of the fauna would likely be negatively impacted, particularly those dependent upon oaks. Adding to the oak mortality, the project area was affected by a severe ice storm in 2009. Many trees were killed which has created fire hazards but does provide some snags for wildlife habitat.

Talus and cave areas provide important habitat for various plants and animals. Species associated with this unique habitat type are typically rare and very sensitive to disturbance. Because this habitat component is in short supply and because species found here are typically rare, human caused disturbance has in the past and will continue to negatively affect species associated with these unique sites. There are four known caves in the Wedington Unit, of which one was gated in 2005 to deter vandalism and to protect threatened, endangered and sensitive species as well as unique cave species.

Detailed information about the effects of the alternatives on each species is provided in the Biological Assessment/Evaluation, (USDA 2011a). Summaries are provided here. Other sources of information included the U.S. Fish and Wildlife Service, Forest Service Region 8 Threatened Endangered and Sensitive Species list, Arkansas Natural Heritage Commission database, historical compartment prescription records, district field survey reports, state universities, the Arkansas Game and Fish Commission, Arkansas Department of Environmental Quality (ADEQ) water quality reports and monitoring, City of Ft. Smith water quality reports and monitoring, numerous reference documents, and consultation with knowledgeable

scientists, professionals, technicians and other agencies utilizing the best available science.

Neotropical Migratory Birds: In the southeastern region of the United States, populations of 19 species of neotropical migratory birds have been found to be significantly declining (USDI 1985-2010). Declining species are associated with forest interior habitat, as well as edge, brush and open habitats (Hunter et al. 1992).

The Region 8 Landbird Strategy has been implemented on the Boston Mountain Ranger District with breeding birds being recorded by habitat type since 1997. Data collected for migratory birds as well as the BAE (USDA 2011a) can be viewed at the Boston Mountain Ranger District in Ozark, Arkansas.

Terrestrial Management Indicator Species (MIS): MIS is a planning and monitoring tool that reflects a way to analyze a change in conditions. MIS generally fall into three broad categories:

- **Demand species** are those species that provide important recreational and/or economic values.
- **Species of concern** are those species for which there is a concern about their population numbers.
- **Ecological indicators** are species that are tied to a particular element(s) of biological diversity and serve as surrogates for other species associated with that element(s).

A MIS report (USDA 2001a) on population trends of some forest MIS along with Owen (2010) was used for analysis of effects to MIS species associated with implementation of project alternatives.

The following table shows Ozark National Forest MIS species pertinent to the analysis area, the habitat type they represent and population trends (USDA 2001 and NatureServe 2010). From the Forest MIS list, 13 species have potential habitat based on occurrence records and/or habitat requirements within the analysis area.

Table 3 - MIS Species, Habitat Requirements and Population Trends

<i>Species</i>	<i>MIS Type</i>	<i>Habitat Requirements</i>	<i>Population Trend</i>
<i>Northern bobwhite</i>	ecological indicator	pine and oak woodland and native grasslands	decreasing
<i>Whitetail deer</i>	demand	mosaic of forest age classes	increasing
<i>Black bear</i>	demand	remote habitat with mature forest component with intermixed 0-5 year old regeneration	increasing
<i>Wild turkey</i>	demand	mature forest with open areas containing grasses/forbs/soft mast	decreasing
<i>Prairie warbler</i>	ecological indicator	regenerating forest communities	decreasing
<i>Cerulean Warbler</i>	ecological indicator	communities associated with mature hardwood forest with complex canopy structures, and dry-mesic oak Forest communities	decreasing range-wide, apparently secure in AR
<i>Northern parula</i>	ecological indicator	communities associated with forests in riparian areas	stable
<i>Ovenbird</i>	ecological indicator	dry-mesic oak forests	stable to increasing
<i>Red-headed woodpecker</i>	ecological indicator	oak woodland overstories	decreasing
<i>Pileated woodpecker</i>	ecological indicator	large snags	stable
<i>Scarlet tanager</i>	ecological indicator	mature dry-mesic oak forest communities	stable
<i>Smallmouth bass</i>	demand	cool water stream communities	stable
<i>Largemouth bass</i>	demand	lake and large river communities	stable

Northern Bobwhite Quail

Historically, quail thrived on lands that are now part of the Ozark National Forest due to the significant amount of oak savanna, oak woodland, and glade habitat that was maintained by periodic fire. As farms failed and fire prevention became the norm, a much thicker forest replaced those once maintained by fire or grazing. Although this species is widespread throughout Arkansas, population numbers are very low. During the last decade the population has continued a steady decline (Fowler 1992). Limiting factors listed by the AGFC include the overuse of cool-season forages (Bermuda, fescue) and monoculture hay pastures, the lack of prescribed fire being used, and timber management practices that do not consider quality quail habitat (AGFC 2001).

Effects from Alternative 1

Direct and indirect effects: It is anticipated that approximately 16,064 acres of improved early

seral habitat would be created as a result of the proposed actions. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. A discussion on herbicide effects to all the MIS species and wildlife can be viewed at the end of this section. Prescribed fire as called for in this action would maintain the preferred early successional habitat preferred by this species. The implementation of this alternative will greatly improve wildlife habitat and will be beneficial to this bird.

Cumulative effects: Trends in habitat quality and quantity on nearby private lands are likely to continue. Local population trends will likely decrease in the short-term (10 years) if no action is implemented. Overall bob-white quail populations are expected to remain around current levels with forest-wide management activities combined with actions occurring on private lands as well.

Effects from Alternative 2

Direct, indirect and cumulative effects: Direct and indirect effects would be negative to this bird with implementation of this alternative. The No-Action alternative does nothing to improve habitat for this species. The predicted effects would include a continued decline in local quail populations. The current conditions include fescue fields and closed canopy hardwood forest. The grass is not spaced out in the mosaic pattern that quail prefer. This would not provide now or over time the early successional habitat that quail need.

Eastern Wild Turkey

Wild turkeys were abundant on the Ozark National Forest in the mid 1800's. Habitat destruction and unregulated hunting reduced populations to historic lows in the early 1900s. Restocking efforts and habitat improvement have resulted in increasing populations over the last several decades. Wild turkeys occupy a wide range of habitats with diversified habitats providing optimum conditions (Schroeder 1985). Good turkey habitat includes mature stands of mixed-hardwoods, groups of sawtimber-sized conifers, relatively open understories, scattered clearings, well-distributed water, reasonable freedom from disturbance, and adequate area (USDA 1980). During the first few weeks after hatching, turkey poults require large amounts of protein supplied mainly by insects found in grassy openings. These first few weeks are likely the most critical period of the turkeys' entire life (Hewitt 1967).

Effects from Alternative 1

Direct and indirect effects: Approximately 16,064 acres of improved early seral habitat would be created as a result of the proposed action. In addition, favoring large, wildlife preferred trees such as white and red oak, would allow the stands to increase acorn production. This would in turn produce more winter food for the turkey. Soft mast vegetation would also be stimulated with proposed action. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. A discussion on herbicide effects to all the MIS species and wildlife can be viewed at the end of this section. Prescribed fire as called for in this action would maintain the preferred early successional habitat preferred by this species. The implementation of this alternative would greatly improve wildlife habitat and will be beneficial to this bird. Direct and indirect effects with this alternative would be beneficial to this species. The overall proposed treatments would

create a mosaic landscape locally that turkeys prefer.

Cumulative effects: Trends in habitat quality and quantity on nearby private lands are likely to continue. Local population trends should increase in the short-term (10 years), however, overall turkey habitat capability would remain stable with forest-wide management activities combined with actions occurring on private lands.

Effects from Alternative 2

Direct and indirect effects: The predicted effects from implementation of the No-Action alternative would be little change to local turkey populations. The No-Action alternative does nothing to improve habitat for this species. No action would provide unsuitable early successional habitat for the turkey. Direct and indirect effects would be negative to this bird with implementation of this alternative. A lack of active management would cause local declines over time to this species.

Cumulative effects: Trends in habitat quality and quantity on nearby private lands are likely to continue. Local population trends would likely decrease in the short-term (10 years) if no action is implemented. Overall turkey habitat capability is expected to remain stable with forest-wide management activities combined with actions occurring on private lands.

White-tailed Deer

White-tailed deer thrived on the Ozark National Forest due to a diversity of habitat types, historic maintenance of deer browse by fire, and the adaptability of this species. Today, deer continue to flourish on the Forest and adapt as habitat and land use changes continue to occur in the area. Deer usually prosper following fire, timber harvest, storms, or other events that produce new vegetation within their feeding range (USDA 1981). On good sites, forage yields will peak at two to three years after regeneration and then decline for the next five or six years. On poor sites, forage production peaks in three to five years and holds up fairly well for ten years or more (USDA 1981).

Deer spotlight data for the Wedington WMA (USDA 2008b) show a trend in increase of deer detected from 2002 to 2008. This trend might be explained by an increase in populations due to closed gun harvest seasons, limited bag limits and the closure of the area to off-highway vehicles.

Effects from Alternative 1

Direct and indirect effects: It is anticipated that approximately 16,064 acres of improved early seral habitat would be created as a result of proposed actions. Removal of the fescue (and subsequent reduction in the risk of fescue toxicosis) would greatly improve the habitat for the deer. Prescribed fire as called for in this action would create some new herbaceous growth for browse. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. A discussion on herbicide effects to all the MIS species and wildlife can be viewed at the end of this section. Direct and indirect effects would be that local deer populations may slightly increase because the new habitat created by this alternative would exhibit a higher amount of available forage (primarily soft mast and browse) than the current existing habitat.

Cumulative effects: No long-term declines in deer populations are expected with this alternative combined with both forest-wide and private land management in the area.

Effects from Alternative 2

Direct and indirect effects: The predicted effects from implementation of the No-Action alternative would be minimal. The local population would likely remain stable. However, this alternative does nothing to improve the fields and remove the chance of fescue toxicosis.

Cumulative effects: There could be a slight decline in the local deer population, over the long term however, there should be no effect to the overall population with implementation of the no-action alternative when combined with projects on both Forest Service and private lands.

Black Bear

Historically, the black bear thrived in the remote areas of Arkansas (including the Ozark National Forest). Black bears have a preference for large expanses of woodland and forested areas and historically were widely distributed. Today, black bears are largely restricted to more remote, less accessible mountainous areas, nearly impenetrable thickets, and forested areas along watercourses with minimum human disturbance. The distribution of black bears has been largely restricted/influenced by encroaching development and habitat conversion (e.g., agriculture). Early-successional stands provide the high protein foods needed in the post-denning period. Regeneration areas also provide the high-energy food used throughout the breeding season and alternative food sources for fall and winter during years of mast failure. If they are of sufficient size, new stands (5 to 10 years old) also provide excellent escape cover as well as food.

Effects from Alternative 1

Direct and indirect effects: It is anticipated that about 16,064 acres of improved early successional habitat would be created with this alternative. This type of habitat would provide high protein feeding areas that the bear requires. Prescribed fire as called for in this action would create a mosaic of habitat preferred by this species. This type of habitat provides the high-protein foods needed after emerging from dens. Burns also increase production of fruits such as blackberry and low bush blueberry. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. A discussion on herbicide effects to all the MIS species and wildlife can be viewed at the end of this section. There could be a slight increase in disturbance due to the vegetation treatments. An increase in visitors to the area is anticipated. Local black bear populations and patterns of use may be slightly affected; however, disturbance would likely be short-term as bears customarily adjust their patterns to new environments.

Cumulative effects: This alternative would create the early successional habitat that bears prefer. Black bear populations are expected to continue to increase over time. There are no known negative cumulative effects to this species with implementation of the proposed action when combined with actions occurring on both Forest Service and private lands.

Effects from Alternative 2

Direct and indirect effects: It is expected that the implementation of the No-Action alternative would have little to no effects on the black bear. Local population would likely remain stable.

However, this alternative does nothing to create conditions for high-protein food needed for the bear.

Cumulative effects: There should be no effect to the overall population with implementation of the no-action alternative when combined with projects on both Forest Service and private lands.

Pileated Woodpecker

The pileated woodpecker was selected as a MIS to represent snag-dependent species and species requiring older forests. Breeding bird surveys in the Ozark-Ouachita physiographic province suggest that populations of the pileated woodpecker trended downward from the 1960s until the mid-1980s and have stabilized or trended slightly upward since then.

Effects from Alternative 1

Direct and indirect effects: Implementation of the Proposed Action would change this bird's habitat in the hardwood forest slated for wildlife stand improvement (WSI) and thinning. Large trees would be left in the stand providing habitat for this woodpecker. The local riparian corridors would also provide habitat. Treatment of the fields would have no effect on this bird. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. Local populations of this species should remain stable and forest-wide population goals should not be affected.

Cumulative effects: When combined with increased development and stand clearing on nearby private property, a local decrease in suitable habitat may occur.

Effects from Alternative 2

Direct and indirect effects: Implementation of the No-Action alternative may have positive long-term effects on the pileated woodpecker as current forest types in the project area continue to age and snag abundance (presumably) increases. It is not expected that local populations of this species would experience a decline and forest-wide populations should not be affected.

Cumulative effects: When combined with increased development and stand clearing on nearby private property, a local decrease in suitable habitat may occur.

Prairie Warbler

The prairie warbler was chosen as a MIS due to its status as a neotropical migratory bird of concern that has specialized habitat needs. Optimal habitat conditions for this species are even-aged regeneration forests of stand size or larger. Monitoring in the Ozark-Ouachita physiographic province shows a declining trend for this species.

Effects from Alternative 1

Direct and indirect effects: There could be a slight negative effect on local prairie warbler populations that are nesting in the area where vegetative, road and recreation activities occur. The thinning and WSI cuts proposed in this alternative would provide a large increase in habitat for this species, especially following the cuts and one year after. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. Local populations of this species should remain stable and forest-wide population goals should not be affected.

Cumulative effects: There will be no known negative effects to this species with implementation of this alternative when combined with actions that occur on public and private lands.

Effects from Alternative 2

Direct, indirect and cumulative effects: It is expected that implementation of the No-Action alternative will have no cumulative effect on the overall populations of this species, but could have a negative direct and indirect effect on the local populations as no new habitat is created with this alternative.

Northern Parula

The northern parula prefers coniferous or mixed woodlands primarily associated with riparian communities. This species is common on the Ozark National Forest and flourishes in areas where mature woodlands, especially trees draped with moss like lichens or Spanish moss are found.

Effects from Alternative 1

Direct and indirect effects: Implementation of this alternative could have negative effects on the northern parula because a large part of the mature forest stand would be removed. However, very few trees would be removed from the riparian areas. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. Mature riparian habitats (e.g., Illinois River corridor) would continue to provide desired habitat. Disturbance to individual nesting birds in stands slated for WSI and thinning would be high. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. Herbicide would not be used in the riparian corridor. A discussion on herbicide effects to all the MIS species and wildlife can be viewed at the end of this section.

Cumulative effects: Because this species is considered common and because suitable adjacent and nearby habitat is present on both public and private lands, there will be no known cumulative adverse effects to this species with the proposed action.

Effects from Alternative 2

Direct and indirect effects: Implementation of this alternative should have no effect on the northern parula. Mature riparian habitats would continue to provide desired habitat and with no management activities, an increase in mature riparian trees could result over time.

Cumulative effects: Because this species is considered common and because suitable adjacent and nearby habitat is present on both public and private lands, there will be no known cumulative adverse effects to this species with the no action alternative.

Scarlet Tanager

The scarlet tanager was selected as a MIS to represent species that require mature interior forest habitat. Breeding bird surveys in the Ozark-Ouachita physiographic province suggest that the scarlet tanager population has been increasing since the surveys began in 1967.

Effects from Alternative 1

Direct and indirect effects: Implementation of the Proposed Action would result in direct and indirect effects, such as a loss of habitat for the scarlet tanager. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. Because trails, firelines, pastures, wildlife openings and WSI areas would be maintained in an early seral stage, any scarlet tanagers using the project area near these sites would be forced to relocate to nearby suitable habitats. The management of the analysis area would be expected to continue to provide the mature forest habitat preferred by this species, especially in the riparian corridors and unsuitable/inoperable areas. This alternative could also affect the nesting of this tanager, as it nests 20-25 feet in the canopy.

Cumulative effects: Forest-wide population declines are not anticipated because habitat will be maintained in riparian corridors and inoperable areas.

Effects from Alternative 2

Direct and indirect effects: Implementation of the No-Action alternative may have positive long-term effects on the scarlet tanager as current forest types in the project area continue to age and mature. The No-Action alternative does not propose any new construction, herbicide use or tree removal. This alternative would have beneficial effects to this bird.

Cumulative effects: Forest-wide population declines are not anticipated with the action alternative.

Ovenbird

The ovenbird is a common species that prefers open, mature, dry, deciduous forest devoid of thick understory. Habitat with an abundance of leaf litter, fallen logs, and rocks are preferred. This species nests on the ground.

Effects from Alternative 1

Direct and indirect effects: Implementation would have a direct negative impact to nesting birds in the immediate vicinity. The proposed WSI and thinnings would create the woodland conditions (devoid of thick understory) that the ovenbird prefers. There may be a slight loss of habitat for the ovenbird through clearing of habitat caused by road, fireline and trail construction and some of the timber treatments. Prescribed burning could benefit this species when conducted outside of the nesting season by removing some of the understory densities, combined with silvicultural treatments such as thinning. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed.

Cumulative effects: It is not expected that local populations of this species would experience a decline and forest-wide population goals should not be affected. When combined with increased development and stand clearing on nearby private property, a local increase in suitable habitat may occur.

Effects from Alternative 2

Direct and indirect effects: Implementation of the No-Action alternative could have a negative

effect on the ovenbird over time as this alternative does not provide for open woodlands and a forest devoid of thick understory that this bird prefers. Natural conditions would continue and closed canopy conditions would increase over time.

Cumulative effects: Cumulatively, it is not expected that local populations of this species would experience a decline and forest-wide population goals should not be affected. When combined with increased development and stand clearing on nearby private property, a local decrease in suitable habitat may occur.

Red-Headed Woodpecker

The red-headed woodpecker is generally uncommon on the Ozark National Forest where it prefers open oak woodlands with savannah-like grasslands and adequate snags to provide nesting and roosting habitat.

Effects from Alternative 1

Direct and indirect effects: Implementation of this alternative would create the open oak woodlands that this woodpecker prefers through WSI, thinning and prescribed fire. Prescribed fire would create the snags preferred by this species. There could be a slight loss of habitat for the woodpecker through clearing of habitat caused by road, fireline and trail construction. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed. The majority of the silviculture treatments, combined with prescribed burning as proposed in this alternative would provide fair to good habitat for this species. Very little habitat for this species resides on adjacent private lands and it is anticipated that National Forest lands provide better habitat.

Cumulative effects: It is expected that implementation of this alternative would have positive effects to this species, particularly to the analysis area populations.

Effects from Alternative 2

Direct and indirect effects: Implementation of the No-Action alternative could have a negative effect on this bird over time as this alternative does not provide for open woodlands that this species prefers.

Cumulative effects: It is not expected that local populations of this species would experience a decline and forest-wide population goals should not be affected. Very little habitat for this species resides on adjacent private lands and it is anticipated that National Forest lands provide better habitat. When combined with increased development and stand clearing on nearby private property, a local decrease in suitable habitat may occur.

Cerulean Warbler

The cerulean warbler prefers mature and over-mature forest, including bottomland forests and shady upland woods. Preferred habitats generally have complex canopy structure and little undergrowth. This species is locally common and restricted to habitats in the Ozark National Forest, along the Buffalo National River, and various state wildlife management areas.

Effects from Alternative 1

Direct and indirect effects: Implementation of the proposed alternative would result in a slight loss of habitat for the cerulean warbler with some of the treatments initially; however, treatments such as thinning in mature and immature poletimber stands and WSI treatments would create the complex, un-even aged stand type that this species prefers over time. Prescribed burning as proposed would create open areas in the understory that this bird favors. Herbicide use as proposed in this alternative should not pose any risk to this species as long as label instructions and RLRMP guidelines and standards are followed.

Cumulative effects: It is not expected that local populations of this species would experience a decline and forest-wide population goals should not be affected. When combined with increased development and stand clearing on nearby private property, a local decrease in suitable habitat may occur.

Effects from Alternative 2

Direct and indirect effects: Implementation of the No-Action alternative should have no effect on the cerulean warbler as current forest types in the project area would continue to age and mature. Natural disturbances to the forest could create the complex canopy habitat that this species prefers. The No-Action alternative does not propose any new construction of roads or tree removal.

Cumulative effects: Forest-wide population declines are not anticipated when combined with activities on private and public lands with this alternative.

Terrestrial Threatened, Endangered, and Sensitive Species (TES)

Historical Reference Conditions

The Wedington Unit is in the historic range for several TES species. Several species that historically occurred within or near the area have not been found in the last decade. There is still some potential habitat for a large number of species that have historically occurred in the area, but for species dependent on disturbance, regular fire regimes, tall grass prairie habitat, open wooded areas and open areas, these specific habitats are not as abundant as they were historically.

The following TES species have historical occurrences in the area but have not been found recently. More complete descriptions of the species can be found in Appendix B of the BAE (USDA 2011a). These species will not be evaluated further.

Table 4 - Historical TES species and status on the Wedington Unit

Missouri Bladderpod	plant	Endangered
Cave Crayfish	invertebrate	Endangered
Indiana Bat	mammal	Endangered
Ozark Cavefish	fish	Threatened
Small-Headed Pipewort	plant	Sensitive
Open-Ground Draba	plant	Sensitive
Royal Catchfly	plant	Sensitive
Butternut	plant	Sensitive
Ozark Cornsalad	plant	Sensitive
Ozark Shiner	fish	Sensitive
An Isopod <i>Lirceus bicuspidatus</i>	invertebrate	Sensitive

Existing Conditions: Terrestrial Threatened, Endangered, and Sensitive Species (TES):

The Wedington Unit provides a wide array of habitats for several threatened, endangered or sensitive species. Species present and confirmed by field surveys that are currently known from the watershed include those listed in table 5. A more complete description of each species can be found in BAE completed for the Wedington Restoration Project (USDA 2011a).

The area is predominately hardwood tree species (white and red oak) with a small amount of shortleaf pine. Non-native invasive species (NNIS) cover over 4,000 acres of the project area. Chinese privet, fescue and kudzu are the primary NNIS issues in the area, although there are at least 7 other NNIS present on the Wedington unit. These NNIS are displacing native vegetation and threaten the integrity of the native ecosystem. Chinese privet is abundant on the Wedington unit and is moving into the drains and riparian areas. This plant will often form monotypic stands in the understory that crowd out native plants (Hanula et al. 2009).

There are some talus and cave-like sheltered sites that provide some habitat for endangered bats. There are 4 known caves. Lake Wedington is likely used by the gray bat for evening foraging for insects. The bald eagle is a frequent visitor to this lake. Moist floodplains, such as those found along the Illinois River and Chambers Hollow Creek provide suitable habitat for the southern lady-slipper. The forested areas provide habitat for the Ozark Chinquapin, Ozark spiderwort and the Ozark trillium.

Table 5 - Current TES species and status on the Wedington Unit

Gray Bat	mammal	Endangered
Ozark big-eared Bat	mammal	Endangered
Southern Lady's Slipper	plant	Sensitive
Bush's Poppymallow	plant	Sensitive
Ozark Chinquapin	plant	Sensitive
Ozark Spiderwort	plant	Sensitive
Ozark Least Trillium	plant	Sensitive
Blue Ridge Catchfly	plant	Sensitive
Neosho Mucket	invertebrate	Sensitive
Oklahoma Salamander	salamander	Sensitive
Bald Eagle	bird	Sensitive

Recent observation of hibernating bats partially covered with a white fungus currently called “white-nose fungus” appears to be affecting hibernating bats in caves in New York, Vermont, Massachusetts, Kentucky, Tennessee and Connecticut. Bat species with confirmed cases include eastern pipistrelle, little brown, northern long-eared, eastern small-footed, and Indiana bats although it is possible that any cave-hibernating bat may be affected. At this time, little is known about the cause or origin of the fungus and whether it causes or accompanies the death of the bats. If it is transmittable and causes bat mortality, it has the potential to decimate large numbers of bats, perhaps entire colonies. Bat and cave researchers are implementing protective measures to reduce the possibility that contamination is spread from equipment or the clothing of cavers. Additional study is ongoing to determine the type of pathogen, its origin, and its virulence. To date, this fungus has not been identified in hibernating bat colonies in Arkansas. It was recently found in the neighboring states of Tennessee, Missouri and Oklahoma. The Ozark-St. Francis NF has adopted a WNS protocol including cave closures and decontamination procedures for biologists and researchers (USDI 2011a,b) to minimize the risk of WNS transmission into Arkansas.

Ozark big-eared bat

The Ozark big-eared bat is generally associated with caves, cliffs, and rock ledges in well drained, oak-hickory forests. Maternity caves and hibernacula occur in a number of different surroundings, from large continuous blocks of forest to smaller forest tracts interspersed with open areas. Clark et al (1993) found that adult female Ozark big-eared bats from maternity colonies preferred to forage along woodland edges. By foraging along woodland edges the bat may benefit from a less cluttered environment when cover is nearby and prey densities are high. Foraging habitat for the Ozark big-eared bat is fair within the analysis area, particularly in riparian areas. Bat mist surveys and bluff line surveys (USDA 2007b) did not discover this bat species or its preferred bluff line habitat within the analysis area. Favorable winter habitat may be very near the analysis area, possibly on adjacent private land.

Effects from Alternative 1

Direct and indirect effects: No activities are planned that would impact either blufflines or caves favored by this species. Forest-wide standards, which require a vegetation buffer of 200 feet around all caves, would provide for the protection of all existing or discovered Ozark big-

eared bat caves. Vegetation treatments, road decommissioning, skidtrails, firelines and recreation trails as proposed would create more open foraging habitat for this species. Prescribed burning as proposed would create additional foraging habitat for this bat. The timing of burns is generally in the spring, which is past the time when this bat will be hibernating. WSI and thinning treatments will also create preferred foraging habitat for this bat (USDA, 2003-2006).

Herbicide use as proposed in Alternative 1 would be applied at the lowest effective rate in meeting project objectives. All label instructions and RLRMP standards and guidelines would be followed. Forest wide standards and site specific analysis would minimize potential herbicide effects to bat species. A more detailed description of herbicide effects to mammals can be found in the BAE specialist report and in the herbicide section of this EA.

Cumulative effects: All activities with the proposed alternative are consistent with the RLRMP. In the Biological Assessment (USDA 2005), the Forest Wildlife Biologist (with concurrence from the USFWS), determined that the Ozark big-eared bat is “not likely to be adversely affected” from standard forest management, as long as the Revised Forest Plan guidelines and mitigations are followed. Implementation of forest-wide standards for the protection of caves, karst habitats, and riparian areas would help protect needed hibernacula sites as well as potential foraging sites for these species. As described in the “Effects” section above, it is the determination of the BAE that the proposed action is “Not likely to adversely affect” the Ozark big-eared bat when combined with actions that occur on both private and Forest Service lands (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: This alternative does not meet RLRMP standards or guidelines to maintain viable populations of the Ozark big-eared bat. Allowing increased canopy closure would result in a continued decrease of the open foraging conditions that this bat species prefers. There would be no direct or indirect effects with implementation of this alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on private and Forest Service lands (USDA 2011a).

Gray bat

Gray bats are cave residents throughout the year, although different caves are usually occupied in summer than winter. Few individuals are found outside caves. They hibernate primarily in deep vertical caves with large rooms that act as cold air traps (Harvey et al 1998). Gray bats forage primarily over water along rivers or near lake shores. Most foraging occurs within 5 km of the surface. The greatest threat to the species is vandalism by people during the winter while bats are in caves, or in the summer, when maternity cave sites could be disturbed. Winter hibernacula are scattered over the north portion of the state. This bat can occur on any Ozark National Forest district with the possible exception of the Magazine Ranger District, which is south of the Arkansas River. The analysis area provides limited suitable summer foraging habitat. Suitable winter habitat is located to the north of the project area. Bat mist surveys conducted during May of 2008 by ASU did not capture any gray bats. Gray bats have been documented near the project area in a cave owned by the U.S. Fish and Wildlife Service. Bluff line surveys in the analysis area did not find this species of bat but did find some potential bluff

line habitat that this bat favors.

Effects from Alternative 1

Direct and indirect effects: No activities are planned that would impact either blufflines or caves favored by this species. Forest-wide standards, which require a vegetation buffer of 200 feet around all caves, would provide for the protection of all existing or discovered gray bat caves. Vegetation treatments, road decommissioning, skidtrails, firelines, wildlife opening maintenance, pasture restoration and trail construction as proposed would create more open foraging habitat for this species. Prescribed burning as proposed would create additional foraging habitat for this bat (USDA, 2003-2006). The timing of burns is generally in the spring, which is past the time when this bat will be hibernating. WSI and thinning treatments would increase the foraging habitat for this bat.

Herbicide use as proposed in Alternative 1 would be applied at the lowest effective rate in meeting project objectives. All label instructions and RLRMP standards and guidelines would be followed. Forest wide standards and site specific analysis would minimize potential herbicide effects to bat species. A more detailed description of herbicide effects to mammals can be found in the BAE specialist report and in the herbicide section of this EA.

Cumulative effects: As described in the “Effects” section above, it is the determination of the BAE that the proposed action is “Not likely to adversely affect” the gray bat when combined with actions occurring on both private and public lands. The proposed action is consistent with the RLRMP (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: This alternative does not meet RLRMP standards or guidelines to maintain viable populations of the gray bat. Allowing increased canopy closure would result in a continued decrease of the open foraging conditions that this bat species prefers. There would be no direct or indirect effects with implementation of this alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011a).

Southern lady slipper

This plant is known to occur in 12 Arkansas counties and possibly others (Smith 1988). The preferred habitat for this plant consists of moist floodplains along creeks and on rich moist slopes. The biggest threat to the plant is collection for commercial sale and digging for replanting in wildflower gardens. The plant appears to be able to tolerate certain timber management activities while some such as thinning are beneficial. This plant has been found throughout the project area in the riparian corridors.

Effects from Alternative 1

Direct and indirect effects: Riparian corridors are protected by direction from the Forest Plan. A more detailed description of these areas can be found in Water Resources section of the EA. These areas would further protect this plant from any potential negative impacts that the proposed action could cause. Prescribed burning and some timber treatments could be

beneficial to this species, as it prefers disturbance. The presence of NNIS in riparian corridors is a threat to this plant's habitat. Herbicide treatments to treat the NNIS near the riparian corridors would be conducted when the southern lady slipper is dormant.

Fireline and trail construction could occur near potential habitat for this species. There could be direct and indirect impacts to this plant with fireline and trail construction through direct uprooting of this plant. This is unlikely however; as handtools are used near riparian areas for fire line construction and any sites near the fire lines will be protected.

Cumulative effects: Implementation of proposed alternative would have no cumulative impacts to the southern lady-slipper. It is the determination of the BAE that the proposed action would have beneficial impacts to this plant through road and riparian area closures near existing sites. When combined with actions occurring on both private and public lands, there would be no known cumulative effects to this plant with Alternative 1 (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: This alternative does not meet RLRMP standards or guidelines to maintain viable populations of TES species. Conditions unfavorable to the plant would continue to occur-such as illegal OHV use in the riparian areas of Chambers Hollow and the Illinois River. There would be negative direct or indirect effects with implementation of this alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011a).

Bush's Poppymallow

The usual habitat for Bush's poppymallow is rocky open woods, wooded valleys, ravine bottoms, and borders of glades. This plant ranges from extreme southwestern Missouri to northwest Arkansas and northeastern Oklahoma. This species has often been noted in Benton and Washington Counties on roadsides and is easily viewed from several county roads. This species is known from several locations on the Wedington Unit. Threats to this species include collection by plant enthusiasts and herbicide application along roadside areas where it occurs. The decline in this plant has been attributed to habitat loss, primarily by succession in the absence of fires, urbanization and conversion of hayfields to croplands (NatureServe 2011).

Effects from Alternative 1

Direct and indirect effects: Known sites of this plant exist in areas scheduled to be treated. TSI and WSI thinning would create preferred habitat for this species following treatments. Prescribed fire would be beneficial to this plant and its habitat. Trail, fireline and road construction could have negative impacts to this plant through direct uprooting. All known sites would be protected during any activities with a fifty-foot herbicide free buffer.

Cumulative effects: Implementation of proposed alternative would have no cumulative impacts to Bush's poppymallow. It is the determination of the BAE that the proposed action will have beneficial impacts to this plant through habitat improvement near existing sites. When combined with actions occurring on both private and public lands, there would be no known cumulative effects to this plant with Alternative 1 (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: This alternative does not meet RLRMP standards or guidelines to maintain viable populations of TES species. Conditions would continue to occur-such as continued canopy closure and woody encroachment of road edges and fields which could negatively impact sites where this plant is located. This alternative does nothing to create potential habitat for this plant. There would be negative direct or indirect effects with implementation of this alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011a).

Ozark chinquapin

This species was listed as sensitive because it is threatened with destruction by a fungal disease. This species was found throughout the proposed project area during field surveys (USDA 2007b, 2010). The Ozark chinquapin is fairly common on the Boston Mountain Ranger District. Most trees on the District are small trees resulting from stump sprouts, with very few surviving to the age of producing seed.

Effects from Alternative 1

Direct and indirect effects: Prescribed burning, fireline, road and trail construction, timber thinning and WSI treatments could be beneficial to this species, as it prefers disturbance, which often results in incidental stump sprouts. Repeated prescribed burns would be detrimental to individual plants. Road closures and decommissioning of roads would have beneficial impacts to this tree. Herbicide treatments as proposed could have negative direct and indirect impacts to this species, however, mitigation measures, such as: "If Ozark chinquapin were located in a stand to be treated with herbicide, the trees would be placed in a 60-foot buffer, inside which no treatment with herbicides or handtools would occur" (see Mitigations Measure of the EA) will protect this tree during proposed treatments. The proposed project may impact some individuals; but is not likely to cause a trend to federal listing or loss of viability.

Cumulative effects: When the effects the proposed project are combined with potential effects of all other planned or anticipated projects on both public and private lands, there would be no known cumulative impacts on this species (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: A lack of management could be detrimental to this tree. The healthiest, largest trees in past projects were found near power line right-of-ways, openings, and places where thinning and open conditions have occurred. Allowing closed canopy conditions would result in direct and indirect negative impacts to this tree.

Cumulative effects: When the effects the proposed project are combined with potential effects of all other planned or anticipated projects on both public and private lands, there would be no known cumulative impacts on this species (USDA 2011a).

Ozark Spiderwort

This plant is endemic to the Ozark Mountains of Missouri, Oklahoma, and Arkansas and the Ouachita Mountains of western Arkansas and southeastern Oklahoma. Numerous local potential threats include housing developments, roadway construction and maintenance, and herbicide use (Watson 1989). This plant was not found during field surveys; however, there is potential habitat in the analysis area (USDA 2007a).

Effects from Alternative 1

Direct and indirect effects: Prescribed burning and some timber treatments could be beneficial to this species, as it prefers some disturbance. The construction of roads, firelines and trails could have negative direct and indirect impacts to this plant by incidental uprooting of individual plants. Field surveys failed to note the presence of this species. Herbicide treatments as proposed in this alternative could have negative direct and indirect impacts to individuals; however, known sites of this plant are not in stands proposed for treatments. NNIS in the area could have negative impacts to this plant's habitat.

Cumulative effects: Implementation of the proposed alternative may impact individuals but is not likely to cause cumulative impacts, such as a declining trend to the Ozark spiderwort's federal listing or loss of viability (USDA 2011).

Effects from Alternative 2

Direct and indirect effects: Natural conditions would continue which would have little to no direct or indirect impacts on this plant as none are known to occur within the analysis area.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011).

Ozark least trillium

This plant is known to occur only in Missouri and in 11 Arkansas counties. It lives in acid cherty-flinty soils of shallow draws in oak-hickory, oak-pine, or oak-chestnut woodland in the Ozark region. It occurs on limestone glades and bald knobs in the White River region and has been found in the project area. While several populations have been destroyed and it is known from a limited number of extant sites, several populations contain large numbers of individuals, and appear to be able to tolerate minor habitat disturbances.

Effects from Alternative 1

Direct and indirect effects: Selective timber harvesting with low ground disturbance is beneficial for this species of plant and critical to improve its habitat (NatureServe 2011). The thinning proposed in this alternative would have beneficial impacts to this plant. Wildlife Stand Improvements (WSI) could have negative impacts to this species due to the nature of the large openings created by the treatments. Road, fireline and trail construction could have negative impacts to this plant through direct uprooting. Prescribed fire should have beneficial impacts to

this plant as it prefers a forest floor with light herbaceous cover.

Cumulative effects: Implementation of the proposed alternative may impact individuals but is not likely to cause cumulative impacts, such as a declining trend to the Ozark least trillium's federal listing or loss of viability (USDA 2011a).

Blue Ridge catchfly

Favorable habitat includes talus slopes beneath sandstone bluff lines. This type of habitat is limited on the Forest. This plant was not found in the project area (USDA 2008), however, habitat is good for this plant and it is likely to occur.

Effects from Alternative 1

Direct and indirect effects: Timber harvest activity, road and fire line construction could adversely impact this species by disturbing habitat, by top killing the plant, or by opening the forest floor to more sunlight, which allows for drying the site and indirectly impacting plant habitat. Talus sites where this plant occurs would be protected by implementation of forest-wide standards, which limit harvest activities in these areas. Riparian closure and decommissioning of roads would be beneficial to this plant as it would lessen disturbance caused by vehicles and OHVs. Activities proposed should not affect this plant as it is generally found where management activities would not occur.

Herbicide treatments as proposed in Alternative 1 could have negative direct and indirect impacts to individual species, however, this plant was not found in stands proposed for treatments. Although this species was not found during field surveys, habitat is good in the riparian corridors. Work as called for in the proposed action would not occur in the riparian corridors except for fireline construction.

Cumulative effects: It is the determination of the BAE that due to protection and management direction provided in forest wide standards and the plant's resistance and expected response to treatments likely to be practiced where it could occur, a determination of "may impact individuals but not likely to cause a trend to federal listing or a loss of viability" is made for the Blue Ridge Catchfly for the proposed action (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: This alternative does not meet RLRMP standards or guidelines to maintain viable populations of this plant. Conditions such as increased canopy closure would persist. There would be no direct or indirect effects with implementation of this alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011a).

Bald eagle

This species, recently de-listed as a threatened species, but still on the Regional Forester's sensitive species list, has been noted in the project area and is a common winter visitor to the Illinois River and Lake Wedington. Normal forest management activities that take place well away from nest and communal roost areas and are well removed from large rivers,

impoundments and other significant foraging areas have little or no impacts on transient wintering bald eagles (USDA 2005).

Effects from Alternative 1

Direct and indirect effects: Any birds in the area during timber harvest activities would likely move away temporarily to avoid noise and traffic. All timber harvest treatments proposed would not affect any known roost sites. Prescribed burning for site preparation and wildlife habitat improvement would not harm eagle roosting sites during the winter, since none occur there now. This large bird moves considerable distances in normal foraging and simply moves away from areas while burning is taking place. There would be no direct or indirect impacts on the eagle caused by prescribed burning. Behavior patterns may be affected by management activities; however, they should be short in time and duration.

Herbicide spraying of the NNIS in Lake Wedington could have a negative impact to this bird. Herbicide use as proposed in Alternative 1 would be applied at the lowest effective rate in meeting project objectives. All label instructions and RLRMP standards and guidelines would be followed. Forest wide standards and site specific analysis would minimize effects to avian species. For a more detailed description of herbicide effects see the herbicide section of this EA and the BAE specialist report (USFS 2011a). There would be no direct or indirect impact on this species with the proposed alternative.

Cumulative effects: When the effects of the proposed action within the project area are combined with potential effects of all other planned or anticipated projects on both public and private lands, which would include the Wedington Restoration Project, there would be no cumulative impacts. The proposed action would not impact individuals, cause a decline in populations, affect the federal listing, or cause loss of viability to this avian species (USDA 2011a).

Effects from Alternative 2

Direct and indirect effects: Natural conditions would continue which would have no direct or indirect impacts on the bald eagle with implementation of the no action alternative.

Cumulative effects: There would be no known cumulative effects with the no action alternative when combined with activities that occur on both private and Forest Service lands (USDA 2011a).

Summarized Herbicide Effects for all terrestrial species: MIS and TES:

Herbicide use as proposed in Alternative 1 would be applied at the lowest effective rate in meeting project objectives. All label instructions and RLRMP standards and guidelines would be followed. Forest wide standards and site specific analysis would minimize effects to terrestrial species.

Terrestrial animals might be exposed to any applied herbicide from direct spray, the ingestion of contaminated media (vegetation, prey species or water), grooming activities, or indirect contact with contaminated vegetation. Species of wildlife are likely to spend longer periods of time, compared to humans, in contact with contaminated vegetation. (Syracuse Environmental

Research Associates (SERA) 2003a). The highest exposures for terrestrial vertebrates would occur after ingesting contaminated vegetation or insects. The ingestion of treated vegetation over a prolonged period, however, seems implausible as plants are damaged and begin to die soon after herbicide is applied.

The current risk assessment for glyphosate generally supports the conclusions reached by U.S. EPA. Based on the current data, it has been determined that effects to birds, mammals, fish and invertebrates are minimal (SERA 2003a). As with all longer term exposure scenarios involving the consumption of contaminated vegetation, the plausibility of this exposure scenario is limited because damage to the treated vegetation – i.e., vegetation directly sprayed at the highest application rate – would reduce and perhaps eliminate the possibility of any animal actually consuming this vegetation over a prolonged period.

For terrestrial mammals, the central estimates of hazard quotients for triclopyr do not exceed the level of concern for any exposure scenarios (SERA 2003b). At the upper range of exposures, the hazard quotients exceed the level of concern for large mammals and large birds consuming contaminated vegetation exclusively at the application site. This risk assessment is consistent with the risk characterization given by U.S. EPA indicating that contaminated vegetation is the primary concern in the use of triclopyr and that high application rates would exceed the level of concern for both birds and mammals in longer term exposure scenarios.

There would be an initial reduction of grassy vegetation due to herbicide eradication of the fescue in the fields. Native grasses generally become established 2-5 years following planting. The presence of native grasses, forbs and legumes following planting after 3 years will be of more significance to species that use early seral habitat because the risk of fescue toxicosis drops.

This alternative would create early seral habitat (approximately 16,064 acres) for species such as deer, turkey and quail and improve the overall habitat carrying capacity of this area while having a small reduction in late seral habitat for species such as the pileated woodpecker.

Direct mortality of less mobile wildlife species such as shrews, voles, various reptiles and amphibians can be expected with site prep prescribed burning. This loss is offset by the increased abundance of forage and insect numbers following a burn, which allows population numbers to increase beyond pre-burn levels. Removal of shading vegetation in the corridor due to the construction of the boat launch may adversely affect some reptile and amphibian species in the short term, but fallen snags eventually create cover for amphibians and sunning sites for reptiles.

Mechanical treatments such as disking and dozer work associated with fireline, road and trail construction, field restoration and wildlife opening maintenance would disturb and potentially kill or harm insects, small mammals and reptiles at the time treatments take place. Improved forage and cover availability following this work would cause an increase in the numbers of insects and small mammals to population levels greater than before treatment initially.

Construction of firelines and roads would temporarily disturb vegetation, increase sunlight to the ground. Long-term impacts on wildlife would be minimal. Some disturbance of wildlife can be expected and individuals of slower moving or less mobile species may perish during the construction process. Disturbance to wildlife due to the presence of humans and motor vehicles

is expected to cause new patterns and behaviors to local area wildlife.

Existing Conditions: Aquatic Fauna and Fisheries:

The area for this analysis is as described in Section 3.2. Much of the watershed area is included in the karst region of Arkansas; an area with a shallow soil profile where water runoff quickly infiltrates and is transported through underground passages contributing to the groundwater basin. This unique area supports endangered or threatened species including the Ozark cavefish (*Troglichthys rosae*) and the Benton cave crayfish (*Cambarus aculabrum*).

The stream systems here vary in size from tiny forested spring runs with deep gravel bottoms and abundant watercress to high gradient gravel, cobble and bedrock streams, to larger streams and rivers such as the confluence of Muddy Creek and the mainstem of the Illinois River. The existing conditions of stream channels in this area varies, and some streams appear to still be experiencing effects that began during the timber boom period (1880-1920), and the intensive agriculture period that followed (1920-1940's).

Invertebrates

The Neosho mucket, a Regional Forester sensitive species, has been found in the Illinois River bordering the Wedington Unit. Increased sediment loads as well as disturbance to banks along creeks and the Illinois River causing accelerated erosion are a primary concern in relation to habitat for the mussel.

The Benton cave crayfish is a cave dependent crayfish with no pigmentation known from only four caves in Benton and Washington County. It is listed as a federally endangered species because of its extremely limited distribution and its vulnerability to declines in water quality caused by nutrient pollution of its subterranean stream habitats from septic systems and poultry farms (Graening et al 2006, Cordeiro et al 2010).

Vertebrates

The Arkansas darter is considered a sensitive species by the regional forester. It prefers spring-fed vegetated runs and creeks with some mud bottoms (Page and Burr 2011).

The least darter ranges from the Great Lakes region to south-central Oklahoma and northwest Arkansas. It inhabits spring runs with sand and silt bottoms with aquatic vegetation. It is considered rare in the Illinois River drainage likely due to a trend in increased siltation of streams over many years (Hargrave and Johnson 2003).

The Ozark cavefish is a small cave dependent fish with no pigment and no eyes. Its distribution is in the Springfield Plateau region of southwest Missouri, southeastern Oklahoma and Northwestern Arkansas. It is rare and protected as a threatened species (Page and Burr 2011).

The Oklahoma salamander is a small stream-dwelling salamander. Populations residing in clear spring-fed streams of reliable flow regimes with abundant gravel in which they can forage and avoid fish predators retain juvenile characteristics (i.e., retention of gills and tail fins) throughout their lifespan and are said to be paedomorphic (Dundee 1958, Rudolph 1977, Bonett and Chippindale 2011, Emel and Bonett 2011). Paedomorphic populations of this species are

unique among stream-dwelling salamanders in using gravel as a refuge from fish predators and have been reported to seek groundwater when surface streams become dry (Dundee 1958, Tumblison et al.1990). Other populations do change their form into gillless, lungless, adults which nevertheless retain their aquatic nature (metamorphic). Metamorphic populations usually do not live in stream reaches in which fish are present and prefer cobble or bedrock dominated shallow headwater streams (Brown *pers com* 2011).

The distribution for the species ranges in the Ozark highlands from northeastern Oklahoma and northwest Arkansas. The Wedington Unit is the only place on the Forest from which the species is found. Researchers are in the process of defining the taxonomic status of these two forms (Bonett and Chippindale 2004).

Due to their limited motility, stream-dwelling salamanders are more likely to persist as small isolated populations in patches of suitable habitat. Substrate characteristics may interact with other variables such as water velocity and depth, degree of isolation from the main channel, temperature, and proximity to a spring source in influencing frequency of salamander occurrence (Rudolph 1977, 1980). For these salamanders which are highly reliant on the bottoms of streams for both food and shelter, differences among habitats in sediment regimes will likely influence both abundance and distribution.

Effects of alternatives on Aquatic TES Species

Effects from Alternative 1

Direct and indirect effects: Any actions which include protection of riparian areas from cattle encroachment would be beneficial. Timber and recreational activities should not have any effects on aquatic species assemblages except possibly at the level of individuals which may come in contact with equipment.

Cumulative effects: When the actions are considered in context of previous land use practices the proposed actions should have no effect on aquatic species.

Effects from Alternative 2

Direct and indirect effects: If no protection is offered in allotment and openings, individuals locally may be affected but throughout the landscape this would have little to no effect on aquatic species.

Cumulative effects: There should be no cumulative effects to aquatic species with the no action alternative.

Aquatic Management Indicator Species (MIS)

The smallmouth bass is a management indicator species as it is a prized gamefish much sought after by stream anglers. It prefers streams with flowing pool habitats free of turbidity. This species has been found in the project area along with the spotted bass, also a stream fish but slightly more tolerant of turbidity, and the largemouth bass which prefers impoundments and has been intensively stocked in the watershed.

Effects from Alternative 1

Direct and indirect effects: Actions which protect and /or enhance riparian areas and stream systems in which the smallmouth bass prefers would benefit this species.

Cumulative effects: Combined with the history of land use on the functioning of the stream habitat which the smallmouth bass favors, there should be no cumulative effects from these proposed actions on the smallmouth bass.

Effects from Alternative 2

Direct and indirect effects: The no action alternative would not provide for protection of upstream areas from cattle encroachment. This may increase siltation of larger streams where the smallmouth bass occurs.

Cumulative effects: Combined with the history of land use on the functioning of the stream habitat which the smallmouth bass favors, there should be no cumulative effects from these proposed actions on the smallmouth bass.

Herbicide Effects for all aquatic species:

The current risk assessments for forest – approved herbicides generally supports the conclusions reached by the Environmental Protection Agency (EPA). The effects to aquatic fauna are minimal (SERA 2003a).

In a worst case scenario involving a direct spill of herbicide to a body of water, the decomposition of dead plants in the water could result in an oxygen loss which could cause a fish kill (USEPA 2003). However, following mitigation measures as outlined in the RLRMP reduces the possibility that a direct herbicide spill to a body of water would occur. These measures, in addition to water quality monitoring would help ensure the protection of the present high quality of the streams in the proposed treatment areas.

Due to observations of deformities in populations of amphibians there is increased concern for the effects of **xenobiotics**: chemicals found in living creatures but which are not normally produced or expected to be present. Garlon 3A and Garlon 4 have been specifically tested for malformations in frog embryos and no statistically meaningful effects were noted (SERA 2003a). As long as BMPs and Forest Service regulations relating to the application of herbicides are followed, there should be no negative effects on aquatic fauna.

3.2 SOILS AND WATER

This section addresses how the alternatives may compact and displace soils in the project area and how this may affect stability, erosion, and sedimentation of area streams.

A watershed provides a spatial context into which land management effects can be examined. It can be described as a user-defined point above which all surface water flows. Watersheds are natural divisions of the landscape that include both the waterway and the land that drains to it.

Land managers often use Hydrological Unit Codes (HUCs) to describe watersheds and their relationships to each other. Hydrologic units are drainage areas that are delineated so as to nest into a multi-level hierarchical drainage system. The more digits that are in a hydrologic unit, the smaller the unit. A hydrological unit with eight numbers is referred to as a subbasin. Units within the subbasin are given an additional two numbers and are referred to as watersheds. Units with each watershed are given an additional two numbers (total of 12 digits) and are typically called subwatersheds.

Existing Conditions

The Wedington Unit is in the Illinois River Subbasin. Within this subbasin there are 3 watersheds and 5 subwatersheds associated with the project area (Table 6, Appendix A). These 5 subwatersheds comprise the analysis area for the Wedington Restoration Project. Information on the Illinois River Subbasin and related watersheds and subwatersheds can be found at <http://aarms.cast.uark.edu/viewhuc.php?hucid=11110103>.

Table 6 - Subbasins of the Wedington Unit

watershed	subwatershed	HUC	Percent of Wedington Unit containing subwatershed	Percent of subwatershed containing Wedington Unit
Illinois River	Lake Wedington-Illinois	111101030103	44.5	59
Wedington Creek	Chambers Hollow Illinois	111101030601	32.5	45
Osage Creek	Osage Creek Illinois	111101030305	11.5	9
Wedington Creek	Lake Francis- Illinois	111101030606	7	8
Wedington Creek	Wedington Creek - Upper Illinois	111101030602	4.5	8

Geology, Land Type Associations, and Soils

The watersheds are in the Ozark Highlands. Much of the watershed area is in the Springfield Plateau and a small portion is in the Boston Mountains. The dominant geology is Early Mississippian- Meramecian to Osagean with primarily limestone and chert (90%), early Mississippian to early Devonian consisting of shale and limestone (3%) and late Mississippian Chesterian consisting of sandstone and shales (7%). The Wedington Unit has a similar composition with 87% early Mississippian- Meramecian to Osagean and 7 and 6% of early Mississippian to early Devonian and late Mississippian Chesterian respectively.

The most common soils in the watershed are:

Clarksville extremely gravelly silt loam, 12 to 60 percent slopes31%
 Nixa very gravelly silt loam, 3 to 8 percent slopes11%
 Nixa very gravelly silt loam, 3 to 8 percent slopes8 %
 Captina silt loam, 1 to 3 percent slopes6%
 Nixa very gravelly silt loam, 8 to 12 percent slopes5%

Clarksville extremely gravelly silt loam has rapid permeability and limited water capacity. The Nixa loams are deep and well drained with slow permeability. Captina silt loams greater than 3% slopes can pose a severe erosion concern, these soils also have slow permeability. Surface erosion from roads is dependent on soils, slope, drainage structures, and effectiveness of buffer strips. Surface erosion is evident or is possible on portions of Forest Service roads 95625E, 95624E, 95611K, 95610D, 95611A, 95614C, 95614B, 95615E, 1754A and 95615B. In addition, the powerline right-of-way from the Tower Road (FSR 1743) to the Illinois River (east) is and has been used extensively by off road vehicle users. The low water crossing on FSR1751 is relatively stable but some sediment and impact on streambank stability has been noted.

Water

Many streams in the Springfield Plateau flow underground independent of surface waters. In the Boston Mountains region streams are typically cobble and bedrock dominated.

There are approximately 464 miles of streams in the combined subwatersheds, of these about 58 miles are on Forest Service lands within the Wedington Unit. Of about 2058 acres of ponds and lakes in the subwatersheds about 89 acres are on Forest Service Lands. Waters are designated for fish and wildlife protection, primary and secondary contact recreation, and domestic, agricultural, and industrial water supplies.

The Illinois River originates in the Boston Mountains in Washington County and flows northward into the Springfield Plateau region of the Ozark Highlands, with streams underlain with solution weathering of limestone and cherty gravel substrates. The Illinois is impounded in several areas further downstream in Oklahoma (Lake Tenkiller, Lake Francis).

This area has undergone a great deal of change due to the shifts in land practices over the years. Before 1940 there were reports that creeks that fed the Illinois were among the clearest in the Ozarks. With the introduction of modern farming methods and intensive agriculture streams were fundamentally changed by clearing of riparian areas and removal of expanses of grasslands. Researchers commonly noted declines in the diversity of aquatic fauna in this area after the 1960s (Cloutman and Olmsted 1976). After 1940 the area shifted from rural to urban with the agricultural emphasis on poultry and cattle farming and increasing organic pollutants in these streams. Increases in sediment due to accelerated erosion can adversely affect aquatic biota and habitat, degrade drinking water, and negatively affect the recreational values of streams and rivers.

Excessive inputs of sediments or fines can lead to a decline in fish and other aquatic wildlife habitat by decreasing channel stability, disconnecting habitats from the floodplain, and degrading riparian areas. Aquatic food webs suffer when invertebrate habitat on the stream bed is simplified and gradually obliterated by the influx of surface fines into interstitial spaces between different sizes of stream bed materials (i.e., gravel, cobble, and boulders).

In April 2001 an Off-Highway Vehicle (OHV) communication plan was developed to promote responsible use of OHVs within the Ozark National Forest. At the same time, OHV use within

the Wedington Unit had been steadily increasing. Fueled by rapid population increases in Northwest Arkansas, the Wedington Unit became a favorite gathering place for recreation enthusiasts. The Ozark National Forest has received numerous complaints from the public concerning illegal and irresponsible OHV use in this area over the last several years. In light of the ongoing damage to natural resources and wildlife, OHV use was banned on the Wedington Unit in 2003.

Effects from Alternative 1

Direct, indirect and cumulative effects:

Channel aggradation over time with from gravel to cobble sized material is a typical response of Ozark area stream channels to disturbance (Jacobson and Primm 1997). The long-term cumulative impact of both the ongoing and episodic delivery of bedload sediments is an important consideration. Conditions within the watershed on Forest Service lands are in the process of healing from the unmanaged use of OHVs throughout the Wedington Unit.

There could be short term increases in sediment transported within stream channels associated with forest management activities (timber harvest, site preparation, wildlife activities, and recreation). Following Streamside Management Zone (SMZ) standards as well as other Best Management Practices (BMPs) would protect aquatic species and mitigate potential for sediment influxes.

Adding large woody debris to streams would create pool habitat and could be beneficial to slow-water species such as schooling minnows and sunfish. Most aquatic species would not be negatively impacted unless they are habitat specialists for riffles. Individuals of riffle-favoring species may drift to riffle habitats downstream but on a watershed or even a reach-level scale, invertebrate and fish communities would not change appreciably.

These practices and guidelines are intended to minimize impacts to streams, during and after potential soil-disturbing projects. Considering past, present and future impacts to water quality there should be a reduction in the amount of sediment entering area streams. Monitoring would help to assess any impacts from timber, recreation and wildlife work in the project area. In monitoring, data is collected on substrate composition and characteristics, bank stability, riparian condition, amount of pool habitat, large woody debris in the active channel, and channel type to provide insight into whether a channel is stable, or is in the process of adjusting to changes in sediment input and/or flow modification.

Effects from Alternative 2 – No Action

Direct, indirect and cumulative effects:

There would be no immediate changes to soils in the project area with this alternative. However there are still some areas of unmanaged recreation which this alternative would do nothing to negate and would inevitably lead to increased disturbance of soils in riparian areas as some OHV users create and use their own trails. Current erosion - a natural process - would continue, contributing to increasing rates of erosion in the analysis area. This alternative would not cause any long-term negative effects on the analysis area but may eventually lead to locally degraded conditions especially around allotments which would not be protected by fencing.

3.3 RECREATION AND SCENERY RESOURCES

Visitors come to the OSFNF to participate in a wide variety of recreation opportunities in an outdoor setting. Since visitor perception of an outdoor setting is often greatly affected by changes in scenery, these two resource areas are discussed together. The entire project area serves as the analysis area for recreation and scenery resources. Major recreation activities or critical issues adjacent to the project area may also be considered during analyses.

Existing Conditions

The Analysis area for recreation and scenery resources is considered the entire 28,851 acre Wedington Unit Project Area. Approximately, 17,057 acres of this unit are National Forest System lands and 11,794 acres are in private ownership. Designated roads through this Project Area facilitate a variety of motorized and non-motorized recreational opportunities. Common recreational activities in the project area include driving for pleasure, viewing scenery and wildlife, fishing and boating on Lake Wedington, dispersed camping, horseback riding, and gathering forest products (i.e., berry picking). Hunting for whitetail deer, squirrels, and rabbit are popular recreational activities in this area. Dispersed hunter camps are located throughout the analysis area and several roads are heavily used during hunting seasons.

The area contains visual diversity, with the majority of private ownership consisting of homes, businesses, pasture for livestock, crops and private forested areas. Spring, summer and fall viewing from State Highways, county roads and other primary forest roads are mostly rolling hills with mixed hardwoods, pine and some areas of open pasture land. Winter viewing from the county roads is mostly of mixed hardwoods and pine.

Distinctive features in the project area include the The Lake Wedington Recreation Area, which encompasses 414 acres. This is a major developed recreation site and includes a 102 acre lake. The North Twin Special Interest Area (SIA) located in the north-central portion of the Project Area, encompasses 1,219 acres and is noted for its unique botanical, zoological, and scenic qualities. Heritage resources are abundant throughout the Project Area. Other distinctive features include North Twin hiking trail, Wildcat Creek, Illinois River, Chambers Hollow, Twin Mountains, U.S. Highway 412, State Highway 16, and the small communities of Pedro and Robinson.

There are no National Recreation Areas or Wilderness Areas, within or in the vicinity of the project area.

Recreation Opportunity Spectrum (ROS)

The Recreation Opportunity Spectrum (ROS) is a mapping and classification system that distinguishes between different types of recreation settings available in the Forest. The ROS provides a method for recreation managers and users to understand and visualize the variety of natural outdoor settings, the types of activities that can be pursued, what recreation experiences to expect, where these experiences are available, and how many other people may be found in a specific area of the Forest. This planning tool assists recreation managers in matching the diversity of recreation interests with appropriate opportunities in suitable locations. Lands in private ownership within the Forest boundary are included and assigned an ROS class. The ROS is divided into six major classes for Forest Service use: Primitive, Semi-Primitive Non-

Motorized, Semi-Primitive Motorized, Roaded Natural, Rural, and Urban (FEIS to the RLRMP, pages 3-326 to 3-328).

The majority of the project area, approximately 23,010 acres, is classified as Roaded Natural. Approximately 3,032 acres is classified as Semi-Primitive Motorized, which consists of two blocks of 1,709 acres and 3,223 acres located in the central portion of the analyses area. The Lake Wedington and Hwy 16/County Road 37 corridor along the Illinois River and National Forest Boundary is classified as Rural and encompasses approximately 962 acres, which is predominantly private land.

Roaded Natural is defined as an area characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities. Opportunities for both motorized and non-motorized forms of recreation may be provided. Roaded Natural settings on the Forest are located within a half mile of a road and usually provide higher levels of development such as campgrounds, picnic areas, and river access points.

Semi-Primitive Motorized is defined as an area characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Interaction between users (or concentration of users) is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present but are subtle. The recreation experience opportunity level provided would be characterized by the high probability of experiencing isolation from the sights and sounds of humans, self-reliance through the application of outdoor skills in an environment that offers challenge and risk (opportunity to have a high degree of interaction with the natural environment). Motorized use is permitted.

Rural is defined as an area characterized by substantially modified environment. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Management emphasis is for rural and roaded-natural recreation opportunities. These settings represent the most developed sites and modified natural settings on the Forest. Examples of this classification are motorized and non-motorized recreation, such as driving for pleasure, viewing scenery, picnicking, and fishing.

Scenic Management System

The Ozark-St. Francis National Forest RLRMP adopted a Scenic Management System (SMS) to assist in inventory and management of the aesthetic values of Forest lands (FEIS for the RLRMP pages 3-372 to 3-379). Forest landscapes were inventoried based on viewing distance, concern level, and scenic attractiveness, and assigned individual scenic classes. Each Management Area includes a range of Scenic Integrity Objectives (SIOs) based on the

inventoried scenic class. An SIO is a desired level of excellence, ranging from Low to Very High, based on sociological and physical characteristics of an area and defines the degree of acceptable alteration of the characteristic landscape. Priorities for scenery management on the OSFNF include maintenance or enhancement of the visual character of the Forest to achieve or maintain designated SIOs. The SIOs used in this analysis are defined below:

Definitions of Scenic Integrity Objectives:

High = Valued landscape character "appears" intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

Moderate = Valued landscape character "appears slightly altered." Noticeable deviations must remain visually subordinate to the landscape character being viewed.

The project area contains SIOs High and Moderate. Additionally, 3,545 acres were classified as "Seldom Seen" and not initially assigned an SIO. These areas are not traversed by recreation trails, roads with high sensitivity levels and are not seen from significant viewpoints or travel routes. The SMS manual directs managers to use discretion and individual judgment when prescribing treatments for these seldom seen areas to protect valued public resources.

Consequently, seldom seen areas were assigned an SIO based on juxtaposition to other SIOs and local characteristics (i.e., type and intensity of recreational use). Of the 3,545 "Seldom Seen" acres, 2,839 acres were classified as Moderate and 706 acres were classified as High for this analysis. Private land accounted for approximately 11,297 acres of the project area and is not assigned SIOs. Approximately 12,248 acres of the FS owned lands are classified High and 2,887 acres are classified Moderate. No areas are classified Low.

The vast majority of the Project Area is assigned an SIO of High. This corresponds with the desired future condition of the landscape character which is for a natural appearing landscape emphasizing open forest settings with a diverse and vigorous forest community. Recreation opportunities, scenery, and visitor safety are goals for this area. Moderate SIOs are primarily associated with pastures and large wildlife openings.

Effects from Alternative 1

Recreation users in the area may notice impacts from wildlife habitat, recreation, and vegetation management activities.

Direct and indirect effects: Wildlife Management

The proposed wildlife habitat, hunter and angler access, wildlife viewing and interpretation, fisheries, and large openings/pasture management activities would improve wildlife habitat and populations, and improve recreation opportunities in the Project Area. Eradication of non-native invasive species, establishment of native vegetation, and prescribed burning would improve the scenic quality and integrity of this area by returning it to a more natural setting.

This area is a destination for hunters, anglers, scenery and wildlife viewers, and other outdoor enthusiasts. Forests visitors may notice the immediate effects of activities associated with these proposed activities, as some of these treatment areas are visible from roads. Potential effects include decreased canopy or herbaceous cover, increased sunlight, increased visibility into the

forest, damaged living vegetation, and browned or dying vegetation from the use of herbicides and prescribed fire. There would also be noticeable changes in vegetative texture and color due to the open character of the habitat and exposed soil, particularly when viewed in conjunction with areas that have not been treated.

Blending the proposed treatments with surrounding areas by feathering the edges and screening treatment areas and access roads would particularly help mitigate impacts to scenery in seen portions of treatment areas. However, most visible effects that disturb the vegetation, soil, or view shed would be short-term and not noticeable in the long-term. With implementation of key design criteria found in the RLRMP and project file, the proposed wildlife habitat management activities are not expected to have any direct or in-direct negative effects on recreation resources and would meet the required ROSs and SIOs in the project area

Direct and indirect effects: Recreation Management

The proposed recreation management activities are intended to improve recreation opportunities and increase public use at the Lake Wedington Recreation Area. The Lake Shore Trail is currently broken into unconnected segments. Users are forced to drive their vehicles to access the separate sections of the trail. Additionally, portions of the trail are eroding resulting in poor quality trail and siltation of the lake. The proposed activities include constructing trail segments to create a continuous trail system around Lake Wedington. This would require the construction of a foot bridge over the dam spillway and an over-water boardwalk along Highway 16 connecting the campground to the existing trail. Additional activities include expanding the length of trail to mobility impaired access, providing biking trails, and improving and expanding the number of fishing piers.

These activities are proposed to occur within the Lake Wedington Recreation Area, which is in the Developed Recreation Management Area. These activities are appropriate and would help to meet the future desired condition by meeting established objectives and priorities. The proposed recreation activities are not expected to have any direct or in-direct negative effects on recreation resources and would meet the required ROSs and SIOs in the project area. Future implementation of these activities would be dependent on securing funding.

Direct and indirect effects: Vegetation Management

Proposed vegetation management activities include wildlife/timber stand improvement and pine stand thinning. Proposed methods include mechanical and chemical treatments, along with prescribed burning. Forests visitors may notice the immediate effects of activities associated with the proposed vegetation management activities. Some users may also be affected by sounds of logging equipment and possible road or trail closures due to logging or related activities.

Potential effects of vegetation management include decreased canopy cover, increased sunlight, increased visibility into the forest, visible logging debris and stumps, damaged living vegetation from logging activity, and browned or dying vegetation from the use of herbicides and prescribed fire. There would also be noticeable changes in forest texture and color due to the open character of the stand and exposed soil, particularly when viewed in conjunction with areas that have not been treated.

Blending the proposed treatments with surrounding areas by feathering the edges, screening treatment areas and access roads/log landings, and treating slash would particularly help mitigate impacts to scenery in seen portions of treatment areas. The short-term effects would be a more open understory allowing views further into the forest, potentially improved scenic and wildlife viewing, and some improved recreation opportunities such as hunting. Forest growth over a period of several years would continue to decrease any noticeable effects of management activities over time. With implementation of key design criteria found in the RLRMP and project file, the proposed vegetation treatment activities would not be expected to have any direct or in-direct negative effects on recreation resources and would meet the required ROSs and SIOs in the project area.

Cumulative effects:

Activities that have occurred in the project area in the recent past include wildlife and vegetation management activities, prescribed burning, recreational uses, utility right-of-way (ROW) maintenance, and road maintenance. Activities that are currently occurring in the analysis area include wildlife management, recreational uses, and maintenance of ROWs and roads.

Reasonably foreseeable activities that may occur in the project area include vegetation and wildlife management activities, prescribed burning, recreational uses, ROW maintenance, road maintenance, and impacts from pest and disease outbreaks, changes in private land use patterns, construction of new ROW; treatments of non-native invasive species; and new trail development.

The past, present, and foreseeable projects may have a cumulative effect on the recreation and scenery resources. Implementation of key design criteria found in the RLRMP and project file; intend to limit the negative effects of the proposed activities on recreation and scenery resources.

Effects from Alternative 2 – No Action

Under the No Action Alternative, none of the proposed project activities would be implemented. The beneficial effects of the proposed project activities previously discussed would not be realized.

Direct and indirect effects:

Under the No Action Alternative, there would be no perceivable short-term direct or indirect effects. Long-term direct and indirect effects from the No Action Alternative may decrease the scenic integrity of the area and negatively affect efforts to achieve future desired conditions.

The proposed wildlife and vegetation management activities would not be implemented; consequently, increased quality hunting, fishing, scenery and wildlife viewing opportunities; and forest community structure and diversity improvements would not be realized. Views into the forest would not be altered by project activities. However, long-term visual quality could decline as natural processes result in increased tree density and successional vegetation invades open areas. The result is reduced visual penetration into the forest, reduced populations of early

successional and open habitat species, and an inability to achieve future desired conditions for the Project Area.

The proposed recreation management activities would not be implemented; consequently increased recreation opportunities and quality would not be realized. The existing Lake Shore Hiking Trail would continue to erode reducing hiking opportunities and continuing sedimentation in the lake. The result is reduced recreation opportunities, and a possible decline in Forest visitation, and an inability to achieve future desired conditions for the Project Area.

Cumulative effects:

The No Action Alternative would not result in increased cumulative effects in the analysis area. However, no beneficial effects to recreation, such as improved hunting, fishing, hiking, and scenery and wildlife viewing opportunities would result.

3.4 FOREST HEALTH AND TIMBER MANAGEMENT

This section addresses the management of the Wedington Unit as an Urban Forest. The Forest Plan describes the management as open parklike conditions promoting larger dominant trees. The issue of overstocking and closed canopy will be discussed as they relate to forest health.

For this section, 13,845 total acres is comprised of total stand acres within the project area.

Existing Conditions

All acres of National Forest land within the project area are managed as an Urban Forest. Approximately 12,602 acres of the hardwood stands are overstocked with closed canopies restricting sunlight from reaching the forest floor. The species composition for these acres is almost exclusively of the red oak/white oak/hickory forest type. Approximately 947 acres of the pine stands are overstocked and growth has stagnated. The species composition for these acres is shortleaf pine.

Currently, all acres in the proposed treatment area have sustained heavy damage from the recent ice storm and the oldest age classes of the hardwood stands are suffering from oak decline. Under the current conditions the Wedington Unit would be incapable of sustaining a healthy forest.

Effects from Alternative 1

Direct and indirect effects:

In order to promote increased wildlife habitat diversity and forest health while managing the Wedington unit for an Urban Forest prescription, thinning of the proposed acres is needed. In addition to increased wildlife habitat diversity and forest health, this alternative would return the pine stands back to their correct stocking levels of 60-70 sq ft per acre of basal area and the hardwood stands to 40-50 sq ft per acre of basal area. These actions would keep the healthiest trees in the stand, providing them with space to grow and acquire the necessary resources to flourish. These actions would also remove the damaged and poor quality trees from the population and allow light and space into the understory for seedling and sapling development

to begin. Ultimately, these actions would result in stronger, more viable trees within each stand, making them more resistant to attacks from insects, disease, and other harmful pathogens.

Cumulative effects:

The overall project area would have reduced canopy closure allowing sunlight to reach the forest floor promoting growth of warm season grasses, increase the growth and mast production of residual stands while improving the health of the forest while being managed for the open parklike conditions for an Urban Forest as provided by the Forest Plan. The improved vigor and growth would also increase carbon sequestration within the area. No additional treatments are predicted that would enhance forest health or move towards the Urban Forest management prescription.

Effects from Alternative 2- No Action

Direct and indirect effects:

No action for the proposed project area would result in a continued progression of overstocked trees within the stands. All of the available resources needed for the trees to grow would begin to become less available for individual trees and eventually mortality from competition would begin with suppressed trees. Growth among the surviving trees would stagnate because of the lack of space and the lack of resources needed to continue growth. The trees would become stressed and the chances of becoming susceptible to diseases and insect attacks would increase. The closed canopy would result in limited light being able to penetrate the forest canopy and reach the forest floor. This would result in a loss of understory growth, thus reducing the herbaceous vegetation available to wildlife.

Cumulative effects:

The cumulative effects from alternative 2 would contribute to the overstocked acres that persist throughout the District and Forest. This would result in not moving towards the desired future conditions described in the RLMP.

3.5 AIR QUALITY

Existing Conditions

The entire project area lies within lands designated as a Class II area with respect to the air resource. The Clean Air Act (CAA) defines a Class II area as “A geographic area designated for a moderate degree of protection from future degradation of the air quality.” CAA also identifies areas that are designated as Class I. Class I areas are defined as “A geographic area designated for the most stringent degree of protection from future degradation of air quality.” The closest Class I areas to the proposed burns are Caney Creek Wilderness area, located about 153 miles south and the Upper Buffalo Wilderness located 50 miles east southeast.

Existing emission sources occurring within the project area consist mainly of mobile sources. These include, but are not limited to, combustion engines, dust from unpaved surfaces, and smoke from prescribed (federal, local, county) burning.

The Clean Air Act requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for six pollutants considered harmful to public health and the environment: carbon

monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. The standards were set at the level required to provide an ample margin of safety to protect the public health. (EPA 2010 <http://epa.gov/air/criteria.html>).

An attainment area is a geographic area in which levels of a criteria air pollutant meet NAAQS for the pollutant. Under the Clean Air Act, any area that violates national ambient air quality standards for any of six criteria pollutants as few times as once per year and as often as four times over a three year period is classified as a “non-attainment” area. The proposed project area lies within Washington and Benton Counties in Arkansas. Currently, the levels of all six criteria pollutants are at or below the NAAQS (attainment) in both Counties.

The majority of prescribed burning takes place in the early spring although some site prep burning is done in late summer early fall. Atmospheric conditions are stable to unstable ideal for good smoke dispersal. Approximately 3600 ac of the Wedinjtton Unit has been prescribed burned repeatedly in the last 12 years. Wildfires have been minimal in the last 30 years averaging about 1 fire a year.

Fire has come into scrutiny as a producer of CO₂ in light of concern over global climate change. At this point, it is best to be aware that CO₂ emission is an issue related to prescribe fire, and burning may at some future date come under regulation for CO₂ production. Current studies are underway to document in some fuel types how much carbon is emitted during burns, and how long it takes for the burned area to return to its equilibrium where our forests take up about the same amount of carbon dioxide as they release. Given the scale of this project area the issue of modeling the effects on global climate is considered beyond the scope of this analysis.

Effects from Alternative 1

Direct, indirect and cumulative effects: With respect to air quality in the proposed project area, the greatest potential for effect would be caused by prescribed burning. Short-term changes to the current air quality condition, including contributions to the greenhouse concentration of gases in the atmosphere would result from the prescribed burning in the project. The burning would be conducted in accordance with a prescribed burn plan when conditions are favorable for rapid smoke dispersal. Arkansas Smoke Management Guidelines would be observed.

Because residual smoke flows and settles in low areas during the night and early morning and may contribute to heavy fog formation which creates hazardous road conditions, the proposed burn activities would generally be completed by mid-afternoon so that most smoke is dispersed by nightfall. Individual ignitions would be 3000 acres or less daily.

The direct effects of prescribed burning on air quality would include temporary increases in particulate matter and carbon monoxide concentrations, eye, nose and throat irritations, decreased visibility along travel ways, and odor/nuisance of smoke (Table 7).

Smoke consists of small particles (particulate) of ash, partly consumed fuel, and liquid droplets. Other combustion products include invisible gases such as small quantities of nitrogen oxides. Oxides of nitrogen are usually produced at temperatures only reached in piled or windrowed

slash or in very intense wildfires. In general, prescribed fires produce inconsequential amounts of these gases.

Table 7 - Prescribed Burning Emissions for Alternative 1

Wedington Restoration Project	
Acres proposed per day	3000
Tons of Fuel produced/acre	2.4
Total tons of fuel available	7200
Total Emissions Produced (tons)	14,003
Carbon Dioxide (1.25)	9000
Carbon Monoxide (0.13)	936
Water Vapor (0.50)	3600
Particulate Matter (0.05)	360
Hydrocarbons (0.0125)	90
Nitrogen Oxides (0.0023)	17
Total	14,003

Except for organic soils (which are not typically consumed in prescribed burns), forests fuels contain very little sulfur, so oxides of sulfur are not a problem (USDA 1988). Persons near the actual burn area might receive some respiratory discomfort; however, it is expected that most impacts would be in the form of nuisance smoke and/or smell. Smoke from the proposed burning and the associated emissions would reside in the local area a relatively short time depending on the weather. The public would be notified prior to implementation of any prescribed burns in the project area, so that they may take any needed precautions. Warning signs would be placed along public roads to alert the public of smoky conditions. Smoke trapped in low-lying areas would be expected to dissipate once morning temperatures rise and the nighttime inversion lifts.

Air quality from implementation of the prescribed burning would not be affected by any past burns in the watershed area or by any proposed future burns on the District because once the smoke has dispersed, the emissions are diluted and removed from local airsheds.

For air quality, cumulative effects include all reasonable and foreseeable activities that produce pollutants. Emissions from prescribed burning and from vehicles and machinery during management activities would contribute greenhouse gases and pollutants to the atmosphere, but the volume of these emissions would be inconsequential and are not expected to have a cumulative impact on current air quality in the airshed.

Effects from Alternative 2 No Action

Direct, indirect and cumulative effects: There would be no major changes to present air quality. Exhaust emissions and dust from vehicles passing through the project area would continue. Occasionally, local residents will burn trash and small brush piles which will generate smoke.

3.6 MINERALS

Existing Conditions

The management areas within the project area are considered available for oil and gas exploration and leasing. The Wedington Unit currently has no lands under lease for mineral (gas) exploration. A historical lease was done for approximately 1,200 acres in Township 16 North and Range 32 West in the past but is no longer valid. Only one gas well has been drilled within the proclamation boundaries of the Wedington unit. This well is located on private land in Township 17 North, Range 32 West, and Section 32. The well was drilled in 1987 on the Bernice Ezell property and is still producing. Potential for exploration for gas via either wells or seismic testing is low due to the fact that this is outside the Fayetteville Shale area. There are currently tracts of federal lands within the Wedington Unit that have private minerals held either entirely or partially. This includes two tracts in Township 16 North and Range 32 West (80 and 120 acres), one 160 acre tract in Township 17 North and Range 32 West, and one 180 acre tract in Township 17 North and Range 31 West.

Effects from all alternatives

Direct, indirect, and cumulative effects: In following the President's Energy Initiative, the Forest Service must continue to honor access to the minerals under existing leases and look at potential areas that can environmentally accommodate additional leases. As an Application for Permit to Drill (APD) is received, it would be evaluated on its own merit to minimize impacts to the area, including cumulative impacts. Whenever possible, the existing access roads would be utilized by multiple drilling areas. As wells become unprofitable, they are generally abandoned by the producer, at which time the area is rehabilitated to meet Forest Service Standards.

Effects from oil & gas leasing and explorations in the forest have previously been analyzed through associated environmental assessments for each proposal for surface occupancy for gas exploration. At this time, producers believe there is potential for gas in areas that have not yet been drilled. Based on this assumption, it is likely that additional requests within lease areas to drill would be received by the Forest Service.

Cumulative effects to vegetative resources from the existing and potential future gas well development in the area would be from conversions of small areas (two acres or less) of forest to permanent openings.

There should be no major direct, indirect, or cumulative effects to human health and the physical environment from oil or gas exploration in the project area with either alternative.

3.7 SPECIAL USES

Special uses serve public needs, provide public benefits, and conform to resource management and protection objectives. The uses currently authorized are in full compliance with the terms and conditions of the special use authorization.

Existing Conditions

There are currently 15 active Special Use Permits on the Wedington Unit. These permits consist of utility easements for electric, water, and telephone service. Recreation event permits

have also been authorized on a near annual basis. The remaining permits issued here authorize legal access to private in-holdings. With the Wedington Unit being an urban forest, the potential for more special use permit request for recreational activities and utility company access is high.

Effects from all alternatives

Under either alternative, all special use requests would continue to be reviewed on an individual basis as proposals are received. Proper procedures for permitting special use permits on National Forest lands would be followed.

Direct, indirect, and cumulative effects: With the continued growth in population within the Northwest Arkansas region, the potential for special use permit requests concerning recreational type events/activities is expected to increase. Special Use Permits for other activities such as commercial logging and recreation events is expected to continue. These uses would be in agreement with the types of occurring commercial and non-commercial uses already in the project area. Any new special use proposals would be reviewed on an individual basis when they are received.

There should be no major direct, indirect, or cumulative effects to human health and the physical environment from the administration of special use permits or the proposed reciprocal easements in the project area.

3.8 SAFETY AND HUMAN HEALTH

The Forest Service strives to provide visitor experiences including recreation facilities that are safe for the public to use and enjoy. The proposed recreation activities would be constructed and/or maintained to a standard that would provide for user safety. Beyond that it is the users' responsibility to make use of the facilities in a safe and prudent manner as well as having appropriate personal protective equipment.

Existing Conditions

Hazards in the recreational areas include standing dead trees and snags that might blow down. In addition, the trail around the lake is in need of repair at some segments which could contribute to accidents.

Effects from Alternative 1

Direct, indirect effect and cumulative effects:

Herbicide treatments: There is little, if any, risk to the public from the proposed herbicide treatments, the most likely being a skin reaction in sensitive individuals from contact with liquids on freshly treated vegetation. Herbicides present a minor adverse risk to applicators from overexposure due to accidental release or contact, or repeated exposure to and contact with high concentrations of some products. This is minimized by training and proper supervision. The proposed herbicides do not accumulate in tissue and are passed through the body without major impact. For more information on herbicides, see Appendix D. A risk assessment was conducted

specifically for this project (USDA 2011b) and is available for viewing as part of the project file at the district office.

To improve visitor safety, forest visitors may be prohibited from entering certain areas during prescribed burning. At the conclusion of the harvest activities and prescribed burning, certain roads would be closed, blocked and seeded. These activities will have no long-term negative effects on user safety. Overall these actions should increase public safety.

Effects from Alternative 2-No Action

Direct, indirect, and cumulative effects:

If standing dead vegetation is not cleared the hazards described in the existing conditions would continue and there would be no benefit from having recreational areas relatively free from blow-down hazards.

The Wedington trail around the lake would not be repaired and would continue to deteriorate which might pose hazards for some users.

3.9 HERITAGE RESOURCES

Existing Conditions

Archeological inventory and archival review has been completed for the entire Wedington Unit.

The first systematic archeological work in the Ozarks began as part of museum surveys and excavations directed at perishable remains in rock shelters and caves. In the late 1970s, the US Forest Service, Corps of Engineers, and other federal agencies began to comply with federal environmental and historic preservation legislation. This included contracts with academic and private entities, as well as in-house staffing with professional archaeologists. The first projects on the Wedington Unit of the Ozark-St. Francis NFs date to this period.

The Forest Service Master Site and Project Tracking Atlas and the files of the Arkansas Archeological Survey indicate that there have been numerous surveys and limited excavations on or immediately adjacent to the Wedington Unit. Some are cursory surveys; others are intense systematic surveys combining subsurface probing.

Approximately 46% of the Wedington had received prior cultural resource survey prior to 2007. In 2006 and 2007, intensive surveying and probing were conducted on the remaining 54%. The report was written and submitted to the Arkansas State Historic Preservation Officer in March 2007.

In total, 303 recorded archeological sites are located within the boundaries of the Wedington Unit. One site is listed on the National Register. Thirty-three sites recommended eligible for the National Register of Historic Places are located within the project area; and six sites outside federal land have also been recommended eligible by other researchers. Eighty-two sites on federal land are recommended undetermined eligibility; and 26 sites on private land remain undetermined. One hundred and fifty-five sites are recommended not eligible for the National Register. In terms of cultural affiliation, 163 sites are historic, 20 have primary historic

components with prehistoric components, 13 are primarily prehistoric with historic components, and 107 sites are solely prehistoric sites. This is a remarkably high ratio of prehistoric (140) to historic (196) components. Normally in the Ozarks, historic sites are two to four times more frequent. Prehistoric sites contain primarily Archaic and Woodland occupations, with an overlap of Mississippian or Caddoan occupations. The location of the project area on readily available sources of Keokuk and Reeds Spring chert, and the presence of sandstone outcrops for rockshelters, may be explanations of this high prehistoric site density.

Effects from all Alternatives

Direct, indirect, and cumulative effects

Sites listed, eligible, and undetermined for the National Register on federal land would be protected against ground-disturbing activities. Heritage sites that are determined eligible for the National Register and sites that have undetermined eligibility would be protected from any ground-disturbing activities associated with this project. Buffers would be painted around these sites, and heavy machinery would not be allowed within these boundaries. If additional sites are found during implementation of this project, they would be examined and necessary mitigation measures prescribed by the Forest or District Archaeologist, in consultation with the Arkansas SHPO and relevant federally recognized Tribes, would be implemented. Sites that have been determined not eligible for nomination to the National Register would not be protected unless there is a safety concern or traditional cultural practice associated with the site.

3.10 ENVIRONMENTAL JUSTICE AND CIVIL RIGHTS

This section addresses the adequacy of the opportunity for comments from all ethnic populations. Civil Rights impact analysis need is also discussed.

Civil rights implications were considered related to each alternative. This included the effects of the alternatives on minority groups, women and consumers. Civil rights imply the fair and equal treatment under law, both within the agency and in relations with the public. No potentially major civil rights impacts were found related to any alternative. Therefore, a civil rights impact analysis and statement of findings are not required for this project.

3.11 ECONOMICS

Because users come from all areas of Arkansas and other states, this analysis does not intend to report the entire value of benefits to the local economy. However, some portions of these expenditures do benefit the local and county economy. The percentage of benefit for each sector is not quantifiable.

4.0 LIST OF PREPARERS AND AGENCIES/PERSONS CONSULTED

<u>USDA Forest Service Preparers and Persons Consulted</u>
John Lane – Multiple Resource Assistant – Boston Mountain Ranger District
Frank Palmer – FMO - Boston Mountain Ranger District
Jimmy Lindsay – Forester- Boston Mountain Ranger District
Jobi Brown – NEPA/Biologist/IDT Leader - Boston Mountain Ranger District
Mike Hennigan - Timber Management Assistant, Silviculturist - Boston Mountain Ranger District
Ricky Adair – Engineering Technician - Boston Mountain Ranger District
Rhea Whalen – District Wildlife Biologist - Boston Mountain Ranger District
Mary Brennan - Zone Archeologist- Boston Mountain and Pleasant Hill Ranger Districts
James Bicknell - Minerals and Special Uses - Boston Mountain and Pleasant Hill Ranger Districts
Len Weeks - Forest Soils Scientist – Supervisor’s Office, Ozark NF
Rick Monk - Forest Hydrologist – Supervisor’s Office, Ozark NF
William Carromero - Forest Ecologist – Supervisor’s Office, Ozark NF
Keith Whalen - Forest Fisheries Biologist – Supervisor’s Office, Ozark NF
Tina Rotenbury – Zone GIS Specialist – Supervisor’s Office, Ozark NF
<u>Other Persons or Agencies, or Governments Consulted</u>
State Historic Preservation Office, Little Rock, AR
U.S. Fish and Wildlife Office, Conway, AR
Arkansas Game and Fish Commission
Gene Leeds, contractor, retired district biologist
Arkansas State University, Jonesboro, AR

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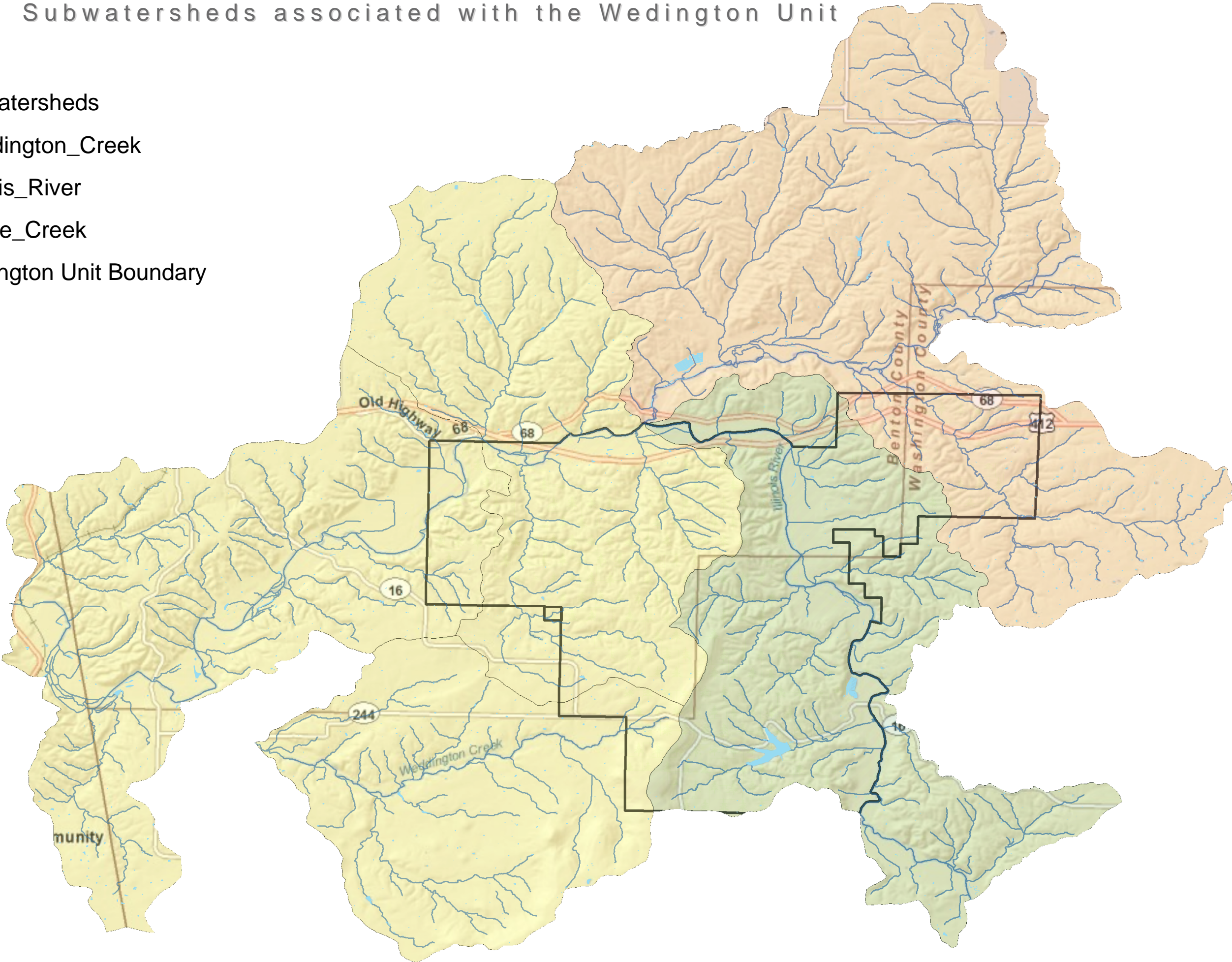
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6.0 APPENDICIES

Appendix A: Subwatersheds associated with the Wedington Unit

- subwatersheds
- Weddington_Creek
- Illinois_River
- Osage_Creek
- Wedington Unit Boundary





Appendix B Proposed Recreation Actions: Wedington Restoration Project

points of interest

- new parking lot
- improved parking
- no parking



bridge



steps



gazebo



fishing pier

trail

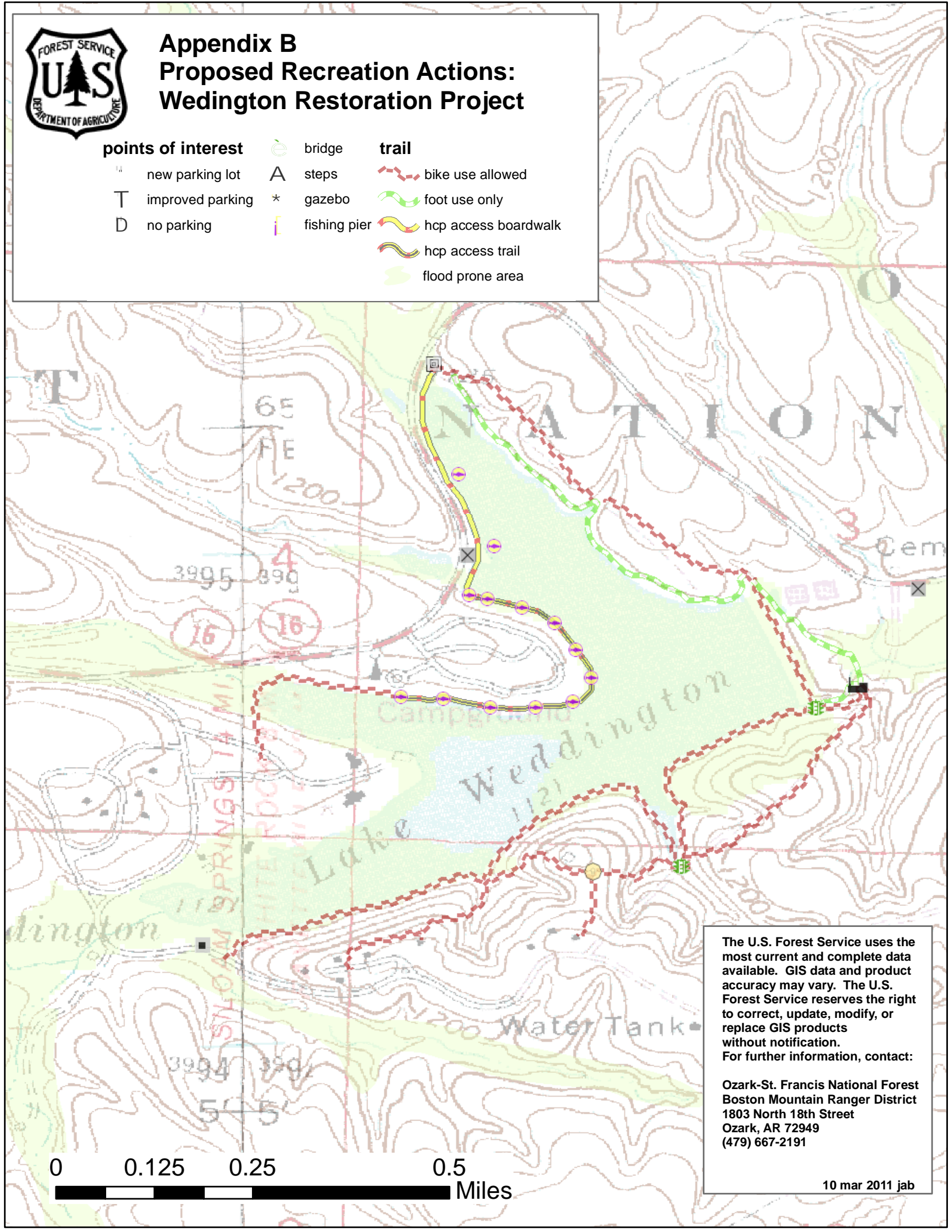
bike use allowed

foot use only

hcp access boardwalk

hcp access trail

flood prone area

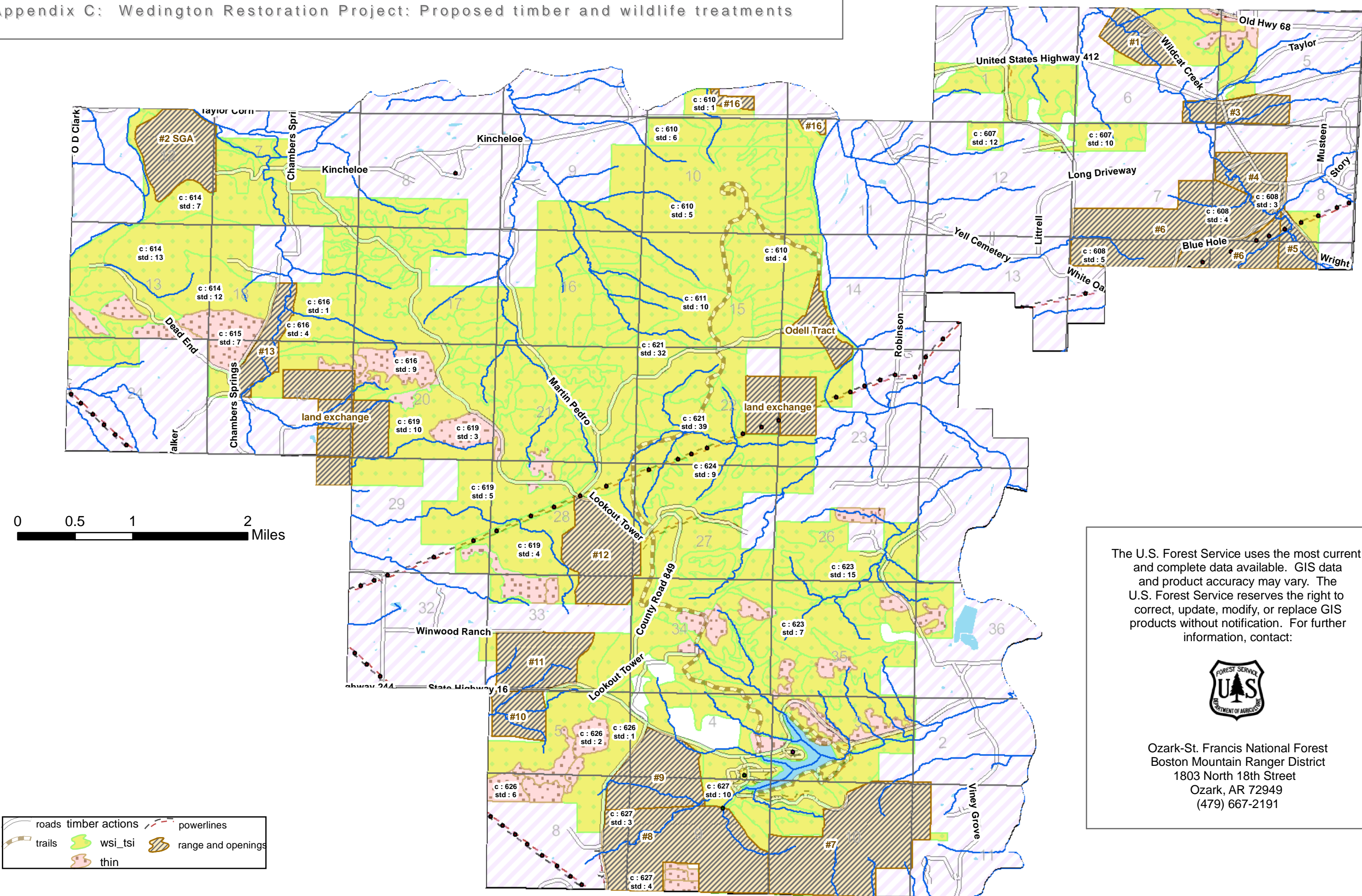


The U.S. Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. The U.S. Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For further information, contact:

Ozark-St. Francis National Forest
Boston Mountain Ranger District
1803 North 18th Street
Ozark, AR 72949
(479) 667-2191

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Appendix C: Wedington Restoration Project: Proposed timber and wildlife treatments



The U.S. Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. The U.S. Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For further information, contact:



Ozark-St. Francis National Forest
Boston Mountain Ranger District
1803 North 18th Street
Ozark, AR 72949
(479) 667-2191



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Boston Mountain Ranger District
1803 North 18th Street
Ozark, AR 72949
(479) 667-2191

APPENDIX D. HERBICIDES

The direct effect of herbicide use is to injure or kill the target plant species and some adjacent plants. Direct and indirect effects of herbicide use would be confined only to those areas treated, and would be short-term, lasting only until the herbicides break down through natural processes. Because of the low toxicity of the herbicides being proposed, as well as the method and requirements of application, there will be no measurable direct or indirect effects to human health and safety, wildlife, PETS species, water and aquatic life, or soils.

The most current SERA Human Health and Ecological Risk Assessments available for imazapyr (USDA FS 2004a), glyphosate (USDA FS 2003b) and triclopyr (USDA FS 2003c) were reviewed during the preparation of the BA/E. The risk assessments may be viewed at the District Office in Ozark, AR. The risk assessments are also available on the internet at.: <http://www.fs.fed.us/foresthealth/pesticide/risk.shtml>

Vegetation management requirements for herbicide application as described in the Forest Plan would further reduce the risk of herbicide use. In general,

1. herbicides would be applied according to labeling and site-specific analysis;
2. all formulations and additives are registered with the EPA and approved for Forest Service use;
3. application rates would be at or below those listed as typical rates;
4. selective applications would be used, rather than broadcast applications;
5. Forest Service supervisors and contract representatives would be certified pesticide applicators;
6. treated areas would be posted with signs in accordance with FSH 7109.11;
7. no herbicides would be applied within 100 feet of public or domestic water sources;
8. herbicides would not be applied within 30 feet of perennial or intermittent streams except for control of nonnative plant infestations.

In addition to the above measures, all standards and guidelines in the Forest Plan would be applied including the following:

Labeling

1. Herbicides are applied according to labeling information and site-specific analysis. Labeling and analysis are used to choose the herbicide, rate, and application method. They are also used to select measures to protect human and wildlife health, non-target vegetation, water, soil, and threatened, endangered, proposed and sensitive species.

Choice of Herbicide

1. Only herbicide formulations and additives registered by the Environmental Protection Agency (EPA) and approved by the Forest Service for use on national forests are applied.
2. Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment.

Application Rate

1. Herbicides are applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting human and wildlife health. Application rate must not exceed typical levels. Typical application rates, in pounds per acre of active ingredient, are as follows:
 - 1.0 lb/acre for glyphosate applied with a manual foliar broadcast treatment,
 - 1.3 lb/acre for glyphosate applied with a cut-surface treatment;
 - 1.4 lb/acre for triclopyr amine applied with a manual foliar broadcast treatment;
 - 1.0 lb/acre for triclopyr ester applied with a manual foliar broadcast treatment,
 - 1.9 lb/acre for triclopyr ester applied with a manual basal treatment.
 - 0.13 lb/acre for imazapic (Risk Assessment – Final Report: Dec. 23, 2004)

Application Method

1. Public safety during such uses as viewing, hiking, berry picking, and fuel wood gathering is a priority concern. Method and timing of application are chosen to achieve objectives while minimizing effects on non-target vegetation and other environmental elements.

Drift Control

1. Weather is monitored and the project is suspended if temperature, humidity, or winds become unfavorable as follows: not applicable for cut-surface treatment; for manual foliar broadcast treatment and manual basal treatment if temperatures are higher than 98F, humidity less than 20%, and wind greater than 15 mph at the target site.
2. Nozzles that produce large droplets or streams of herbicide are used. Nozzles that produce fine droplets are used only for hand (manual) treatment where distance from nozzle to target does not exceed 8 feet.

Supervision and Training

1. A certified applicator supervises each Forest Service application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers.
2. Each Contracting Officer's Representative (COR), who must ensure compliance on contracted herbicide projects, is a certified pesticide applicator. Contract inspectors are trained in herbicide use, handling, and application.

Protection of Workers

1. Forest Service workers who handle herbicides must wear a long-sleeved shirt and long pants made of tightly woven cloth that must be cleaned daily. They must wear a hardhat with plastic liner, waterproofed boots and gloves, and other safety clothing and equipment required by labeling. They must bring a change of clothes to the field in case their clothes become contaminated.

2. Each Forest Service crew must take soap, wash water separate from drinking water, eyewash bottles, and first aid equipment to the field.
3. Contractors ensure that their workers use proper protective clothing and safety equipment required by labeling for the herbicide and application method.
4. Workers must not walk through areas treated by broadcast foliar methods on the day of application.
5. Supervisors must ensure that monitoring is adequate to prevent adverse health effects. Workers displaying unusual sensitivity to the herbicide in use are medically evaluated and, if tested as sensitive to the herbicides in use, are reassigned to other activities.

Protection of the General Public and Private Land

1. Notice signs are clearly posted, with special care taken in areas of anticipated visitor use.
2. No herbicide is broadcast within 100 feet of private land or 300 feet of private residence, unless the landowner agrees to closer treatment. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Protection of Non-Target Vegetation

1. No soil-active herbicide is applied within 30 feet of the drip line of non-target vegetation (e.g., den trees, hardwood inclusions, adjacent stands) within or next to the treated area. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Protection of Threatened, Endangered, Proposed, and Sensitive Species

1. No herbicide is ground-applied within 60 feet of any known threatened, endangered, proposed, or sensitive plant. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Protection of Water and Soil

1. Application equipment, empty herbicide containers, clothes worn during treatment, and skin are not cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate labeled containers
2. Aquifers and public water sources are identified and protected by consulting with the state of Arkansas to ensure compliance with their ground water protection strategies.
3. No herbicide is broadcast on rock outcrops or sinkholes. No soil-active herbicide with a half-life longer than 3 months is broadcast on slopes over 45 percent, erodible soils, or aquifer recharge zones. Such areas are clearly marked before treatment so applicators can easily see and avoid them.
4. No herbicide is ground-applied within 30 horizontal feet of lakes, wetlands, or perennial or intermittent springs and streams, except for control of nonnative plant infestations. No herbicide is applied within 100 horizontal feet of any public or domestic water source. Buffers are clearly marked before treatment so applicators can easily see and avoid them.

Control of Spills

1. During transport, herbicides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part of the vehicle totally isolated from people, food, clothing, and livestock feed.
2. Only the amount of herbicide need for the day's use is brought to the site. At day's end, all leftover herbicide is returned to storage.
3. Herbicide mixing, loading, or cleaning areas in the field are not located within 200 feet of private land, open water or wells, or other sensitive areas.
4. During use, equipment to store, transport, mix, or apply herbicides is inspected daily for leaks.
5. Containers are reused only for their designated purpose. Empty herbicide containers are disposed of according to 40 CFR 165.9 Group I & II Containers.
6. Accident preplanning is done in each site-specific analysis. Emergency spill plans are prepared. In the unlikely event of a spill, the spill is quickly contained and cleaned up, and appropriate agencies and persons are promptly notified.

The cumulative effects of herbicide use with the action alternatives would be limited to the direct and indirect effects described above.

GLOSSARY

Age class - An age grouping of trees according to an interval of years, usually 20 years. A single age class would have trees that are within 20 years of the same age, such as 1-20 years or 21-40 years.

Aquifer - A water-bearing layer of rock (including gravel and sand) that will yield water in usable quantity to a well or spring.

Best Management Practices (BMP) - Procedures or controls typically issued by states to prevent or reduce pollution of surface water (includes runoff control, spill prevention, and operating procedures).

Browse - Twigs, leaves, and young shoots of trees and shrubs that animals eat. Browse is often used to refer to the shrubs eaten by big game, such as elk and deer.

Buffer - A land area that is designated to block or absorb unwanted impacts to the area beyond the buffer. Buffer strips along a trail could block views that may be undesirable. Buffers may be set aside next to wildlife habitat to reduce abrupt change to the habitat.

Canopy - The part of any stand of trees represented by the tree crowns. It usually refers to the uppermost layer of foliage, but it can be used to describe lower layers in a multi-storied forest.

Cover - Any feature that conceals wildlife or fish. Cover may be dead or live vegetation, boulders, or undercut streambanks. Animals use cover to escape from predators, rest, or feed.

Cumulative Effects - Effects on the environment that result from separate, individual actions that, collectively, become significant over time.

Decommissioning - Refers to a specific type of road closure. Activities that result in the stabilization and restoration of unneeded roads to a more natural state (35 CFR 212.1), (FSM 7703).

Desired Future Condition – (DFC) Land or resource conditions that are expected to result if goals and objectives are fully achieved.

Ecology - The study of the relationships between all living organisms and the environment, especially the totality or pattern of interactions; a view that includes all plant and animal species and their unique contributions to a particular habitat.

Ecosystem - The interacting synergism of all living organisms in a particular environment; every plant, insect, aquatic animal, bird, or land species that forms a complex web of interdependency. An action taken at any level in the food chain, use of a pesticide for example, has a potential domino effect on every other occupant of that system.

Endangered species - A plant or animal that is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

Environmental justice - The fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population should be forced to shoulder a disproportionate share of exposure to the negative effects of pollution due to lack of political or economic strength.

Erosion - The wearing away of the land surface by wind or water.

Floodplain - Mostly level land along rivers and streams that may be submerged by floodwater. A 100-year floodplain is an area which can be expected to flood once in approximately every 100 years.

Forb – Any herbaceous plant other than grass or grass-like plants.

Ground Water - Water found below the surface of the land, usually in porous rock formations. Ground water is the source of water found in wells and springs and is used frequently for drinking.

Habitat – The natural environment of a plant or animal. An animal's habitat includes the total environmental conditions for food, cover, and water within its home range.

Herbaceous – A plant that does not develop persistent woody tissue above the ground, but whose aerial portion naturally dies back to the ground at the end of a growing season.

Ineligible for the National Register of Historic Places- Site does not possess characteristics of integrity, association and/or content and offers little or no additional research potential.

Litter – The upper portion of the organic layer covering the soil, consisting of unaltered dead remains of plants and animals whose original form is still visible.

Maintenance Levels. - The level of service provided by a specific road and the maintenance required for that road, consistent with road management objectives and maintenance criteria.

National Forest System Road - A classified forest road under the jurisdiction of the Forest Service. The term “National Forest System Roads” is synonymous with the term “forest development roads” as used in 23 U.S.C. 205.

Non-Native Invasive Species (NNIS) also Noxious weed – A plant regulated or identified by law as being undesirable, troublesome, and difficult to control.

Off Highway Vehicle (OHV) – This term is used synonymously in this document with all terrain vehicles (ATVs).

Perennial stream – A stream that flows year-round (more than 90 percent of the time) with a scoured channel that is always below the water table.

Potentially Eligible for the National Register of Historic Places - Site possesses characteristics of integrity, association and/or content, which could offer additional research potential.

Road - A motor vehicle travelway over 50 inches wide, unless classified and managed as a trail. A road may be classified, unclassified, or temporary (36 CFR 212.1).

Sediment - Topsoil, sand, and minerals washed from the land into water, usually after rain or snow melt. Sediments collecting in rivers, reservoirs, and harbors can destroy fish and wildlife habitat and cloud the water so that sunlight cannot reach aquatic plants. Loss of topsoil from farming, mining, or building activities can be prevented through a variety of erosion-control techniques.

Unclassified Roads - Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways, and off-highway vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1). The regulations at 36 CFR 223.37 require revegetation within 10 years.

Undetermined for the National Register of Historic Places - Site needs additional information gathered to determine if site possesses characteristics of integrity, association and/or content.

Water Quality Standard (WQS) - The combination of a designated use and the maximum concentration of a pollutant which will protect that use for any given body of water.

Water table - The boundary between the saturated and unsaturated zones. Generally, the level to which water will rise in a well (except artesian wells).

Watershed – Entire area that contributes water to a drainage system or stream.

Wetlands - Areas that are soaked or flooded by surface or ground water frequently enough or for sufficient duration to support plants, birds, animals, and aquatic life. Wetlands generally include swamps, marshes, bogs, estuaries, and other inland and coastal areas, and are federally protected. Wetlands are important wildlife habitats, breeding grounds, and nurseries because of their biodiversity. Wetlands are among the most fertile, natural ecosystems in the world since they produce great volumes of food (plant material).