

# *Charles C. Deam Wilderness Trail Project*

## **Environmental Assessment**

Monroe and Jackson Counties, Indiana  
Brownstown Ranger District  
Hoosier National Forest

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**Abstract:** This environmental assessment (EA) describes alternatives to improve resource protection and user safety on existing trails within the Charles C. Deam Wilderness and accommodating peak use at the Grubb Ridge Trailhead adjacent to the wilderness. Three alternative strategies have been developed and analyzed in this EA. Each alternative represents a different combination of actions to deal with four trail segments with poor drainage or flooding problems and the Grubb Ridge Trailhead where parking capacity is exceeded during peak use times. This is the third EA written for this proposal and is a direct result of an April 14, 2000 appeal. It replaces the October 14, 1999 and January 12, 2000 editions. This EA addresses the Appeal Deciding Officer's previous concerns by adding additional alternatives, improving the analysis, and improving the documentation.

# *Charles C. Deam Wilderness Trail Project* Environmental Assessment

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## PREFACE

*The Hoosier National Forest completed a comprehensive land management planning effort with the publishing of the Hoosier National Forest Land and Resource Management Plan (Forest Plan) in 1991. During this effort we made a concerted effort to seek out public involvement. With the public's help we identified issues and alternative approaches to managing the Hoosier National Forest. An environmental impact statement (EIS) was prepared in conjunction with the Forest Plan to document the analysis. The EIS was developed in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality implementing regulations for NEPA.*

*The approval of the Record of Decision for the final EIS on April 8, 1991, represents the first level of decision making related to land and resource management planning. This decision determined the desired future condition of the Hoosier National Forest and established the guidance under which future projects would be implemented.*

*The second, and final, level of decision making focuses on the analysis and implementation of management practices and projects designed to achieve the goals and objectives of the Forest Plan. This level involves site-specific analysis to meet the requirements of NEPA and implementation of projects to address specific on-site resource needs.*

*The environmental assessment (EA) for the proposed Charles C. Deam Wilderness Trails Project documents the site-specific analysis for project implementation at the second level of decision making. This EA was initiated as a result of environmental analysis of the proposed project in accordance with NEPA procedures. These procedures afforded interested and affected parties the opportunity to participate. The EA was prepared outlining the alternatives for carrying out the project, noting any needed mitigation measures, and predicting the relevant environmental consequences. The decision maker may now consider the results of this analysis in making an informed decision.*

*In the past, trail projects such as this one have been categorically excluded from lengthy documentation in an environmental impact statement (EIS) or environmental assessment (EA), and were instead documented in a decision memo. On August 27, 1998, the Seventh Circuit Court of Appeals in Chicago, Illinois (Rhodes v. Johnson, No. 97-3687, slip op.) interpreted the Forest Service Environmental Policy and Procedures Handbook (FSH 1909.15) as demanding "that the presence of extraordinary circumstances requires the Forest Service to prepare an environmental assessment" (U.S. Court of Appeals 1998). Extraordinary circumstances listed in Chapter 30 of FSH 1909.15 include steep slopes, threatened and endangered species or their critical habitat, flood plains, wetlands or municipal watersheds, congressionally designated areas, such as wilderness, etc. The court's ruling, that the mere presence of any of these conditions within the project area would necessitate the preparation of an EA, differs from the Forest Service's interpretation of that section. However, until the Handbook is revised, we intend to write an EA when any of the conditions listed as extraordinary circumstances are present in the project area.*

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# Charles C. Deam Wilderness Trail Project Environmental Assessment

**Note:** Trail width of 36 inches was used for all Segments.

## INTRODUCTION

This Environmental Assessment (EA) analyzes and displays the direct, indirect, and cumulative effects of the proposed action and three alternatives including a no-action alternative. The proposed project involves relocation or repair of several trail segments in the Charles C. Deam Wilderness and expansion of the trailhead parking facility at Grubb Ridge located on and administered by the Brownstown Ranger District of the Hoosier National Forest.

Congress designated The Charles C. Deam Wilderness in 1982. At that time, uses were unrestricted and unmanaged trail establishment by the public was common. After Wilderness designation and extensive public involvement, trail miles were reduced from 109 miles to current total of 36 miles and official access points were reduced from 64 to a current total of five access points.

## PROPOSED ACTION

The Hoosier National Forest proposes to relocate four trail segments (A-D) totaling approximately 3.2 miles of designated trails in the Charles C. Deam Wilderness, and to expand the parking facility at Grubb Ridge Trailhead to accommodate 10 to 15 additional vehicles (see **Figure 1** – Project Area Map). **Table 1** provides a summary of the four trail segments proposed for relocation.

Sgmt.	Description	Proposal	Dist. (mi.)	Acres of Disturbance
A	Located along the Sycamore Loop, a hiking only, no livestock use trail	--Relocate upslope	0.3	0.11
B	Axson Branch Loop at Axson Branch Crossing seasonally flooded by backwater from Monroe Lake	--Relocate upslope above 550 feet elevation --Reduce stream crossings from 5 to 2.	1.1	0.40
C	Grubb Ridge Loop at Saddle Creek Crossing seasonally flooded by backwater from Monroe Lake	--Construct additional route upslope on Frog Pond Ridge above 550 feet elevation. --One fork of Saddle Creek would be crossed at about 555 feet and another fork at about 560 feet in elevation.	1.5	0.55
D	Cope Hollow Loop at Bass Pond	--Relocate to the northwest side of Bass Pond	0.3	0.11

Abandoned trail segments would be closed by posting signs and dragging brush on to the trail. Cross drains or check dams would be constructed as needed to correct drainage and stabilize the abandoned segments. We list mitigations included in the proposed action in the Standards Operation Procedures and Mitigation Measures section of Alternatives section.

The parking facility at Grubb Ridge would be expanded to provide parking for an additional 10 to 15 vehicles. Clearing and hardening a small flat area across the road from the existing trailhead would accomplish the expansion. See **Figure 1** – Project Area Map (**Page 2**), for general location and see **Figure 2** – Site Plan (**Page 3**), for more detail on the parking expansion.

## PURPOSE AND NEED FOR ACTION

The purpose and need for action is to provide quality recreational opportunities and manage for safe public access to the Charles C. Deam Wilderness while providing for the protection of natural resources.

This analysis focuses on four locations along existing trails in the wilderness that are wet or muddy for much of the year, are eroding, and/or are seasonally flooded by backwater from Monroe Lake. These situations cause trail users to go around the muddy spots or create new crossings to bypass the high water and continue along the trail. The result has been widening and braiding of trails, creation of user trails off the main trail system, and accelerated erosion of certain trail sections. The proposed project is needed to protect soil and water resources by relocating certain segments of the trail to more suitable locations.

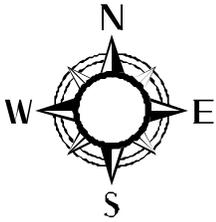
The purpose for the trail relocations is to achieve the following objectives:

- 1) Maintain trails with a firm travel tread without excessive muddiness, erosion or risk of sedimentation.
- 2) Increase user safety on designated trails.
- 3) Reduce unauthorized and unmanaged trail establishment by the public.
- 4) Maintain trails as open and available for public use for as much of the year as possible.
- 5) Maintain a cost effective trail program that is sustainable through fluctuations in budget.

Insert Figure 1 – Project Area Map.

Figure 2 – Site Plan

# Charles C. Deam Wilderness



Not to Scale

## Grubb Ridge Trailhead Proposed Parking Site Sketch and Photo

Larger trees shown in photo will be left to provide buffering between proposed parking area and road while smaller poles and saplings will be removed from proposed parking area.

Vehicles shown in background are located in the existing Grubb Ridge Parking area.



The purpose for the Grubb Ridge Parking Area expansion is to provide for additional safe and legal parking to better meet current use levels for recreation and public access to cemeteries located within the Charles C. Deam Wilderness.

This proposed action is designed to respond to goals provided in the *Hoosier National Forest Land and Resource Management Plan 1991 (Forest Plan)* for managing the Forest for people. Forest goals include providing ways for people to enjoy and view the Forest and its many ecosystems in harmony with the natural communities existing there. Forest Managers will provide for parking and legal, identifiable public access to all areas of the Forest so that visitors can enjoy the lands and resources (Forest Plan, Page 2-3).

## MANAGEMENT DIRECTION

Management of the Charles C. Deam Wilderness Area is guided by the Wilderness Act of 1964 and Bill S. 2710 that designated the proposed 12,953 acres as a component of the National Wilderness Preservation System. The provisions of this Bill are described in a report from the Committee on Energy and Natural Resources (97-557 1982). A provision of the wilderness designation specific to the Charles C. Deam Wilderness area is: *Nothing in this Act shall affect the right of public access to cemeteries located within the Charles C. Deam Wilderness, including the Terril Cemetery.* As described in a 1981 press release from the Office of the Governor, the wilderness designation was based on the assumption that activities allowed in a wilderness area include: hunting, fishing, hiking, camping, canoeing, horseback riding, and others.

Congress designated the Charles C. Deam Wilderness in two units separated by the Tower Ridge Road. This road will remain open to the public with the wilderness units on either side. In order to allow maintenance of the road Congress set the wilderness boundary back 100 feet north and south of the centerline of the road.

This proposed action is guided by direction found in the *Forest Plan*. The Charles C. Deam Wilderness is managed under Management Area 5.1 guidance (*Forest Plan*, Pages 2-36 to 2-39). The existing Grubb Ridge parking area and proposed expansion are outside of the congressionally designated wilderness and are managed under Management Area 6.2 guidance (*Forest Plan*, Pages 2-40 to 2-41). **Table 2** provides a summary of applicable Forest Plan management direction and lists where it can be found in the plan.

Overall Forest	Management Direction	Page #
E, T&S Species	Management objectives for conservation of these species, including mitigating measures, are established in cooperation with the US Fish and Wildlife Service (USFWS) and appropriate State agencies.	2-5
Vegetation	Stands of the appropriate size, variety, and structure are developed and maintained to meet management objectives and located to form interconnecting corridors, if possible.	2-6
Core Areas	Hunting, hiking, bird watching, and other unobtrusive recreation uses are acceptable. However, concentrated use by large numbers of people and heavy impacting activities are not acceptable.	2-7
Soil	Disturbed areas are stabilized as soon as practical.	2-7
Water	Activities occurring on National Forest land should be managed to maintain or improve water quality. Forest management activities will comply with US Environmental Protection Agency approved State plans developed under the Clean Water Act as amended.	2-7
Heritage Resources	All activities will be guided by appropriate laws or regulations including: the Antiquities Act of 1906; the National Historic Preservation Act of 1966, 36 CFR Part 60; The National Register, 36 CFR 800; and Protection of Historic and Cultural Properties, the Archaeological Resource Protection Act of 1979, 36 CFR 296 – Forest Service: Protection of Archaeological Resources, or the amendments to these acts and regulations	2-14
Rec-recreation	Trail design will be flexible to meet a full range of human, physical, and social needs and desires.	2-18
Rec-recreation	Hard-surfaced trails may be provided if conditions dictate a need for this added protection	2-18
Useable Land base	Changes to existing road system, including parking lot or trailhead construction, may be made to meet public access needs.	2-20
Useable Land base	Off-road parking is provided.	2-22
Mgmt. Area	Management Direction	Page #
MA 5.1	Charles C. Deam Wilderness shall be "managed to promote and perpetuate the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration and primitive recreation" (Eastern Wilderness Act, P.L. 93-622).	2-36
MA 5.1	Soil conditions are considered when accomplishing trail work or other ground	2-37

Mgmt. Area	Management Direction	Page #
MA 5.1	Visual Quality objective of "Preservation" will be met.	2-37
MA 5.1	Opportunities exist for primitive type recreational activities such as hiking, backpack camping, horseback riding, hunting, fishing, and nature study.	2-37
MA 5.1	A limited trail system of 40 miles or less provides a sense of discovery and exploration for users. Horses and other pack stock are restricted to those portions of the trail system specifically designated for horse use. Trails are maintained to as low standard as possible while still protecting the resource. Work includes tread maintenance, diversion ditches, sidesloping, and frequent waterbars to divert water from trail and maintain adequate trail drainage.	2-37
MA 5.1	Camping within 100 feet of ponds, lakes, trails, or streams is allowed only on designated sites.	2-38
MA 5.1	Trailheads are limited to five. Parking and signs may be provided.	2-38
MA 6.2	National Forest lands within this area will meet visual quality objectives for retention.	2-40
MA 6.2	Trails associated with trailheads may be provided.	2-41
MA 6.2	No additional road needs are anticipated except for those associated with development of trailheads, parking lots, and other recreation facilities around the perimeter of these areas.	2-41

Detailed direction for transforming Forest Plan decisions involving trails management into specific ground activities is provided in the Forest Service Trails Management Handbook 2309.18 (FSH 1991).

## DECISION TO BE MADE

The decision to be made is whether to relocate or rehabilitate any or all of four sections of designated trails in the Charles C. Deam Wilderness and if so, where the relocations would occur. The decision to be made also includes whether or not to expand the parking facility at Grubb Ridge Trailhead.

## OTHER RELATED PROJECTS

The Hoosier National Forest has experience with similar trail projects. For example, Midwest Trail Ride, Inc. submitted an application for a special use permit to build and maintain trails on National Forest System lands. An environmental assessment (EA)

was prepared to document the analysis of this proposal and several alternatives (U.S. Department of Agriculture, Forest Service 1996a). Another EA was published on February 15, 2001 for the Springs Valley Trail Construction Project in Orange County, Indiana. Neither EA found significant effects on the environment for this kind of project.

Other projects in the proposed project area:

- Maintenance of existing system of designated trails.
- Maintenance of access roads to cemeteries.
- Maintenance of existing cemeteries by private groups and individuals.
- Closure of user-created trails.
- Closure of illegal or overused campsites.

## PUBLIC SCOPING AND ISSUES

Public scoping was initiated May 14, 1999. A letter describing the proposed wilderness trail relocation project was sent to 1,173 interested and affected groups and individuals requesting their comments on the proposed project. Notice of the proposed project was also published in the May 1999 issue of the Hoosier Quarterly. Twelve responses to scoping were received through letters or phone calls. Six letters expressed support for the proposed trail relocations and one expressed opposition. Three letters were general in nature, neither expressing support or opposition for proposed project. Three letters expressed support for the proposed parking lot expansion and one expressed opposition.

Comments included:

- Desire for available riding areas and access to favorite places for resting, watering, and viewing wildflowers;
- Concerns for and against accommodating horse trailers at the proposed Grubb Ridge parking expansion;
- Concern that the parking lot expansion would increase the number of cars driving on Tower Ridge Road, thus decrease the amount of solitude one can experience in the wilderness;
- Parking lot expansion will have adverse effects on certain species of animals that require interior forest;
- Desire to minimize trail associated erosion;
- Concern that water quality could be affected by increased horse use at Bass Pond; and
- Desire to provide protection for archaeological sites.

Suggestions included:

- Consider phasing out horse trails in the wilderness;
- Consider as an alternative the removal of Tower Ridge Road; reestablish trail to cave;
- Establish a shorter loop on the south side of Tower Ridge Road and a trail to Maxine's.

The interdisciplinary team determined that these suggestions were not responsive to the purpose and need for action and outside the scope of the decision to be made. The names of the scoping respondents and a summary of comments and responses is in the project file and available for review upon request.

Scoping revealed a number of issues. Key issues are most relevant to the analysis and are used to formulate alternatives and analyze environmental effects. Non-key issues are issues outside the scope of the analysis or decision to be made. Non-key issues do not drive alternatives and are not carried through the analysis process.

## KEY ISSUES

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### **Issue 1: Access to Favorite Places for Resting, Viewing Wildflowers, and Watering Horses**

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Concern was expressed that the proposed trail relocation at Saddle Creek and Axsom Branch would keep riders from certain favorite places for resting, viewing wildflowers, and watering horses (Rollins *et al.* 1999, Royer 1999, Revalee 1999).

**Issue Measure:** How will alternatives change access to favorite places and opportunities to water horses by alternative.

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### **Issue 2: Parking**

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The parking lot expansion could change use levels and types of use (Hazlewood 1999, Revalee 1999, Tomlinson 1999, Mittenenthal 1999, Winslow 1999).

**Issue Measure:** Would the parking lot affect types of use and amount of use of the National Forest, if so, how?

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### **Issue 3: Wilderness Character and Solitude**

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Concern was expressed that proposed actions, particularly the parking lot expansion, would increase access to the wilderness, thereby increasing the number of users and decreasing

opportunities for solitude. This would affect the character and values of this congressionally-designated wilderness by increasing access (Winslow 1999, Mittenenthal 1999).

**Issue Measure:** How are wilderness values and opportunities for solitude affected by alternatives?

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### **Issue 4: Soil Erosion and Sedimentation**

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Constructing, maintaining, and using recreation trails on soils in this area without applying mitigation measures, such as draining and hardening the surface tread, could cause rutting, muddy soils, and erosion. If not corrected, erosion on the trails could impair long-term soil productivity. Off-site sedimentation could result in reduction in water quality and siltation of streambeds, which could adversely affect fish, freshwater mussels, and other aquatic life forms (Hazlewood 1999, Mittenenthal 1999).

**Issue Measure:** How will alternatives affect risk of erosion and sedimentation?

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### **Issue 5: Car-Animal Collisions and Interior Forest Habitat**

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Concern was expressed that the proposed parking lot expansion would affect wildlife through increased collisions due to increased traffic, removal of plants and habitat, and reduction in interior forest habitat (Winslow 1999).

**Issue Measure:** How will alternatives affect traffic levels and amount of interior forest habitat?

## NON-KEY ISSUES

Presented below is a discussion of issues and their effects, which after consideration were determined to change little or not at all between proposed alternatives. These issues were therefore, included as **non-key** issues. The disposition of these issues is presented below. As they are non-key in this analysis they will not be included in the **Environmental Effects** section of this assessment beginning on **Page 17**.

## **Federally Listed Threatened, Endangered, Proposed, and Sensitive Species**

Four federally listed species have part of their range on the Hoosier National Forest: the endangered Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), fanshell mussel (*Cyprogenia stegaria*),

and the threatened bald eagle (*Haliaeetus leucocephalus*). There is no critical habitat for these species in the project area.

A biological evaluation (BE) was prepared on August 5, 1999 and revised March 26, 2001 that addresses the effects of the proposed project on federally-listed threatened, endangered, and proposed species and the Regional Forester's sensitive species (Reynolds 2001). The BE was developed by Hoosier National Forest biologists with informal assistance from the United States Fish and Wildlife Service (FWS), Bloomington Field Office and the Indiana Department of Natural Resources (IDNR), Division of Nature Preserves. Letters requesting input on the proposed project were sent to both agencies. There are no known occurrences of federally listed threatened or endangered species within the project area.

The FWS recommended measures to mitigate potential impacts to the endangered Indiana bat (*Myotis sodalis*) to ensure that disturbance would not occur during the Indiana bat reproductive season (April 15 through September 15) (see *Standard Operating Procedures and Mitigation Measures* section of this document, pp10-11).

**Indiana Bat:** Removal of suitable roost trees could affect Indiana bat in two ways. First, felling trees during the roosting season could potentially harm Indiana bats roosting in those trees. Second, removing suitable trees would reduce the potential summer roosting and maternity roosting habitat for Indiana bats within the project area.

The BE for this project determined that effects from alternatives on Indiana bats would be insignificant (cannot be meaningfully measured) and discountable (unlikely to occur), therefore this project is not likely to adversely affect the Indiana bat. The US Fish and Wildlife Service concurred with this finding. Mitigation measures to avoid direct impacts to roosting bats are described in the *Alternatives* section of this document.

There are no known hibernacula (caves that meet temperature requirements), summer roosting, maternity roosting, or fall swarming sites within the project area. The nearest known Indiana bat hibernaculum is a cave approximately 11 miles away, and the nearest known maternity colony is about 18 miles away. The closest known occurrence was a male Indiana bat found approximately three miles from the project area.

Forests within the project area have 80 to 100 percent canopy closure, while optimal foraging habitat for Indiana bats consists of more open forests with 50 to 70 percent canopy closure

(Romme *et al.* 1995). Relocating four trail segments and clearing an area to expand the parking lot would affect only a negligible portion of the available foraging habitat for Indiana bats on National Forest System lands in this area. Therefore, this project is not likely to adversely affect the quality of Indiana bat foraging habitat.

Trail and parking lot expansion activities are determined to have no effect on Indiana bat hibernacula, maternity colonies, or fall swarming sites. This project is not likely to affect Indiana bat roosting habitat, since few if any potential roost trees for Indiana bats would be removed during the trail relocation or parking lot expansion. Considering these determinations along with mitigation measures to protect potential habitat during breeding season, alternatives are not expected to affect the Indiana bat and are expected to have very slight potential to affect Indiana bat foraging habitat.

**Gray Bat:** No gray bats were found on the Hoosier National Forest during bat surveys in 1990, 1995, and 1996. The only record of a gray bat on the National Forest is an adult male that was caught in 1998 about 50 miles from the project area. Alternatives are not expected to affect the gray bat. This species will not be discussed further in this document.

**Fanshell:** There is no suitable habitat for this species in the project area. Alternatives are not expected to affect the fanshell. This species will not be discussed further in this document.

**Bald eagle:** There are three active eagle nests at Monroe Lake, the nearest being about 2 miles from the proposed trail relocations and parking lot expansion sites. In addition, there is one possible over wintering night roost site about 2 miles from the proposed trail relocations near Monroe Lake. Bald eagles have not been observed in the vicinity of the project area. The BE determined that the proposed actions would not affect the bald eagle, which largely occupies habitat that does not overlap with trail relocation or parking lot expansion sites. Alternatives are not expected to affect the bald eagle. This species will not be discussed further in this document.

### **Regional Forester's Sensitive Species**

Surveys for sensitive species have been conducted in the project area, and a biological evaluation (BE) has been prepared that address the effects of the proposed project on sensitive species.

The Regional Forester's sensitive species list

(updated February 29, 2000) shows 78 sensitive species that occur or have the potential to occur on the Hoosier National Forest. Those species with appropriate habitat in the project area are discussed below.

## SENSITIVE PLANT SPECIES

There are several sites for Butternut (*Juglans cinerea*) on the Hoosier National Forest and several butternuts are known within the project area. There is suitable habitat for this species along Saddle Creek, Axsom Branch, and Sycamore Creek. There are no butternut trees at the proposed site for the parking lot expansion.

There is one known site for Illinois Wood-sorrel (*Oxalis illinoensis*) near Frog Pond Ridge approximately one-half mile from the proposed trail Segment C. Habitat for this species is primarily along the Mt. Carmel Fault and Frog Pond Ridge on the east slope near riparian habitat. This species was not located along the proposed trail Segment C and little, if any suitable habitat would be disturbed.

There are known sites for American Ginseng (*Panax quinquefolia*) within the project area, however, none of the sites were found along the proposed reroutes. A small portion of suitable habitat would be impacted, but a majority of the habitat would remain intact and available for this species.

There are two known locations for Trailing Arbutus (*Epigaea repens*) in the project area approximately one mile southeast of Saddle Creek. A small portion of suitable habitat would be impacted, but a majority of the habitat would remain intact and available for this species.

The following species were not found within the project area, but suitable habitat for these species may exist:

- Large Yellow Lady's-slipper (*Cypripedium pubescens*)
- Yadkin Panic-grass (*Panicum yadkinense*)

As stated in the BE, the proposed project would have no effect on the plant species listed as Regional Forester's sensitive species. Whether the species have been found within the project area or not, only a negligible proportion of the suitable habitat would be affected by this project. The vast majority of the suitable habitat would remain intact and available for these species to occupy. Furthermore, the trail segments would be rerouted to avoid removing any butternut tree found within the proposed trail corridor (see *Standard Operating*

*Procedures and Mitigation Measures* section of this document, pp10-11). Since no butternut trees would be cut during trail relocation or parking lot expansion, this project should have no effect on this species. Sensitive plant species will not be discussed further in this document.

## SENSITIVE ANIMAL SPECIES

The project area contains potential habitat for cerulean warblers (*Dendroica cerulea*) and sightings have occurred within a mile of the project area. Since the proposed action would leave overstory density and vegetation composition and structure essentially unchanged, this alternative should not affect cerulean warblers or their habitat.

Several observations of Bobcat (*Lynx rufus*) have occurred within and adjacent to the project area. Observations have been recorded within one-half mile of proposed trail Segment B, within one mile of proposed trail Segment D, and within one mile of proposed Project E. Only a small percentage of suitable habitat will be impacted and bobcats often use trails as travelways. There will be no effect on this species.

The following species are found in the project area, but have not been observed near the specific trail segments proposed in this environmental Assessment. There will be no effect on this species.

- Ice Thorn (*Carychium exile*)
- Fountain Cave Springtail (*Pseudosinella fonsa*)
- Wingless Winged Cave Springtail (*Sinella alata*)

The following species were not found within the project area, but suitable habitat for these species may exist:

- Timber Rattlesnake (*Crotalus horridus*)
- River Otter (*Lutra canadensis*)
- Kirtland's Snake (*Clonophis kirtlandii*)
- Evening Bat (*Nycticeius humeralis*)

There are several caves and Karst features within the project area. Trail relocation and parking lot expansion would have no effect on the caves or cave species. Sensitive animal species will not be discussed further in this document.

## FOREST SPECIES OF CONCERN

Routine or heavy maintenance, proposed trail relocations, and expansion of the parking lot would not adversely affect any plant species listed as Forest Species of Concern.

The following plant species have appropriate habitat within the project area:

- Illinois wood-sorrel
- Yadkin's panic-grass
- Yellowwood
- Allegheny
- Appalachian quillwort
- pink thoroughwort
- ridgestem yellow flax
- Illinois pinweed
- Nuttall's bush-clover
- Canada lily
- false garlic
- creeping dewberry

As stated in the BE, the proposed project would have no effect on the plant species listed as Forest Species of Concern. Since none of these plants were found, action alternatives would not affect any plants and only impact a small portion of the suitable habitat available. The vast majority of the suitable habitat would remain intact and available for these species to occupy.

The following animal species have appropriate habitat within the project area:

- River otter
- bobcat
- timber rattlesnake
- Sharp-shinned hawk
- Red-shouldered hawk
- Broad-winged hawk
- worm-eating warbler
- black-and-white warbler
- Osprey
- hooded warbler
- rough green snake

The proposed trails would pass through suitable habitat for Animal Species of Concern, but only a small percentage of this habitat would be affected by alternatives. Since overstory trees would not be removed, this project would only impact a small portion of the suitable habitat for broad-winged hawks, black-and-white warblers, and other species who depend on large trees. The project area would provide suitable foraging habitat for these species.

The degree of understory brush removal involved in trail maintenance and construction would not be sufficient to affect habitat quality for hooded warblers. The project would have minimal impacts on the habitat for red-shouldered hawks, worm-eating warblers, and timber rattlesnakes. It would not affect suitable habitat for ospreys or rough green snakes. Bobcats often use trails and old roads as travel ways, so trail construction and subsequent maintenance would not adversely affect this species. In summary, there would be no adverse effects on any animal species listed as Forest Species of Concern as a result of implementing any alternatives.

The proposed trail maintenance and relocation and parking lot expansion would have no appreciable cumulative effects on Forest Species of concern, when added to the effects of past, present, and reasonably foreseeable future activities. The cumulative effects of the proposed project on plant and animal habitat within the project area are negligible. Species of concern will not be discussed further in this document.

#### MANAGEMENT INDICATOR SPECIES

Management Indicator Species (MIS) are defined as "plant and animal species, communities, or special habitats selected...to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (U.S. Department of Agriculture, Forest Service 1991b, 2620.5). The MIS list includes "species believed to be vulnerable to population decline and species most likely to provide an indication of effects of management actions through population change" (USDA Forest Service 1991c).

The effects of alternatives on MIS have been analyzed and findings indicate that there is a positive effect for riparian associated species and a negative effect for pine associated species. After considering past, present, and foreseeable future activities in the area, cumulative impacts of the proposed project are not likely to have any effect leading to the extirpation of any MIS within the forest planning area. (Reynolds 2001). A detailed discussion of MIS species is in **Appendix B**.

#### STATE WATCH SPECIES

The IDNR Division of Nature Preserves responded that there are three State Watch List plant species located in the vicinity of trail Segment C along Saddle Creek. No other state listed species have been observed within the project area (Huffman 1999). Since the proposed trail relocations and the

parking lot expansion would affect only a small amount of potentially suitable habitat for these species, this project would not significantly affect these species.

### Historic and Archaeological Resources

Concern was expressed that the proposed project could affect heritage resources. Under the National Historic Preservation Act of 1966, it is the policy of the federal government to provide leadership in the preservation of prehistoric and historic resources of the United States.

All trail segments proposed for relocation and the area proposed for parking lot expansion at Grubb Ridge were surveyed for heritage resources (Morris, 1999). A prehistoric lithic scatter was found in the vicinity of trail Segment C and two historic home sites were documented during the survey. None of the sites meet the eligibility criteria for listing on the National Register of Historic Places (Macklin, 1999).

No potentially significant historic properties were found along the proposed routes of the trail relocations or at the proposed parking lot site. Implementation of any alternative would have no effect on Historic and Archaeological Resources. Historic and Archaeological Resources will not be discussed further in this document.

## ALTERNATIVES

### ALTERNATIVES CONSIDERED IN DETAIL

#### Standard Operating Procedures and Mitigation Measures

All alternatives minimize and mitigate adverse effects through the incorporation of resource protection measures in project design and maintenance. The goal of the standard mitigation measures for roads, (parking lots), and trails is to maintain a firm travel surface without excessive muddiness, erosion or sedimentation. The following resource protection measures apply to all action alternatives. They include management direction from the *Forest Plan*, as described previously in **Table 2**.

#### SOIL AND WATER RESOURCES

Soil erosion would be mitigated by keeping the trail gradient to standard (maximum grade of 10 percent in loam soils), align trail to take advantage of natural drainage, establish cross drainage by rolling the grade line, outslope the trail, and constructing dips

or cross drains at appropriate intervals to divert water from the trail tread. According to FSH 2309.18, some type of surfacing is often required for very high use trails or when soil, moisture, and volume of traffic make it impossible to hold the trail tread. In these situations, use of some type of surfacing maybe more cost effective than maintaining an unsurfaced trail. It may be necessary to harden portions of the trail by applying crushed limestone to mitigate wet, muddy conditions. Annual trail inspections indicate those portions of the trails that need additional hardening. Measures to curb soil erosion, prevent stream sedimentation, and protect water quality and aquatic habitat would be applied where needed.

The following Standard Mitigation and Protection Measures for Soil and Water Resources (*Forest Plan Appendix K*) are applicable to this project.

- ❖ Provide for natural drainage and drainage dips during layout and construction of roads (parking lot) and trails.
- ❖ Install waterbars on roads (parking lot) and trails where needed to control runoff and reduce risk of erosion.
- ❖ Outslope roads (parking lot) and trails where needed to control runoff and reduce risk of erosion.
- ❖ Provide for mulching and seeding where needed to control runoff and reduce risk of erosion.

The following Standards and Guidelines for Streamside Management Zones (SMZs) (*Forest Plan Appendix J*) are applicable to all alternatives.

- ❖ Reconstruction and stabilization of existing trails with SMZs will be permitted, providing the sites are located in an environmentally sensitive and responsible manner and subject to specific riparian area, riparian filter strip, and special consideration zone guidance (*Forest Plan Page J-3*).
- ❖ Cuts and fills [in SMZs] will be held to a minimum in accordance with safety and other design criteria (*Forest Plan Page J-3*).
- ❖ Roads (parking lot) and trails will not be constructed in riparian areas unless no practical alternatives exist (*Forest Plan Page J-4*).

- ❖ Trail approaches to streams will be located to minimize erosion and sediment introduction to the stream (*Forest Plan Page J-4*).
- ❖ Roads and trails will not be constructed in riparian filter strips (50 to 100 foot adjacent to the riparian area) unless no practical alternatives exist (*Forest Plan Page J-5*).

Action alternatives would include applicable specifications for trail location, design, alignment, grade, cross drainage, tread hardening, and stream crossings as described in the Forest Service Trails Management Handbook 2309.18 (FSH 1991) and Engineering Management publications EM-7720-103, EM-7720-104, and the draft or later version of the guidelines established by the Regulatory Negotiation Committee for Outdoor Developed Areas (Regulatory Negotiation Committee 1999). The following direction may be applicable to this project.

- ❖ Clear trail tread width will be 36-inch minimum (Regulatory Negotiation Committee 1999, 16.2.2).
- ❖ Locate stream crossings in an area having as many of the following features as possible: 1) a well-defined stream channel; 2) minimal channel width; 3) a flat stream gradient; and 4) stable slopes on uphill trail grades on both sides of the crossing (FSH 1991, 3.12d).
- ❖ Alignment should take advantage of natural drainage to minimize the need for major drainage modifications (FSH 1991, 3.12a).
- ❖ Undulate grade to provide natural drainage (FSH 1991, 3.12b).
- ❖ Avoid flat grades where possible. Grades over ten percent are not recommended in loam type soils. Grades over twelve percent are not recommended in clay-sand type soils (FSH 1991, 3.12b).
- ❖ Remove water from unpaved trail surfaces as quickly as possible. On flatter grades (0-6%), outsloping the trail adequately protects the trail tread. In the intermediate range of grades (7-15%), grade drainage dips are the most effective means to control drainage. On steeper grades (15-30+), rock and log water bars are necessary to control drainage (FSH 1991, 3.16b Subsection 6).

- ❖ Determine the appropriate spacing of drainage facilities. **Table 3** shows spacing requirements for various soil types and percentage of grades (FSH 1991, 3.12b).

Material Type	Percent Grade						
	2	4	6	8	10	12	15
Loam <sup>1/</sup>	350	150	100	75	50	2/	2/

<sup>1/</sup>-Predominant soil texture in the project area.  
<sup>1/</sup> Grades not recommended in this material.

- ❖ Gravel surfacing, turnpiking (raising the trail grade using erosion resistant materials so the trail would be higher than wet, poorly drained soils to allow the walking surface to drain, avoiding excessive muddiness), or puncheons (timber walkway) may be needed on wet sections (FSH 1991, 2.31b).

#### WILDLIFE

To avoid direct impacts to roosting bats, tree removal associated with trail relocation or parking lot expansion would be limited during the Indiana bat reproductive season (April 15 through September 15). Tree removal would not occur during this time or if removal of a tree determined to be a potential roosting tree for Indiana bats is found to be necessary during the roosting period, monitoring would occur to determine presence and coordination would be required with USDI Fish and Wildlife Service. Dusk exit surveys would be conducted for two consecutive nights using a bat detector. If no bats are detected, then the tree may be removed immediately. Trees containing bats will not be removed.

#### PLANTS

No butternut trees would be removed. If necessary, trail segments would be rerouted to avoid butternut trees.

#### HERITAGE RESOURCES

Heritage resources would be protected from disturbance by avoidance during trail relocation and parking lot expansion.

#### ALTERNATIVE 1 (NO ACTION)

This alternative would not reroute three trail segments (A-D) and would not expand the Grubb

Ridge parking lot. Routine maintenance of trails, such as removal of down trees, will continue.

### **ALTERNATIVE 2 (PROPOSED ACTION)**

This alternative would relocate three trail segments. Sycamore (A), Axsom Branch Loops (B), and Bass Pond (D) would be relocated and existing trails rehabilitated. An additional route at Saddle Creek (C) would be constructed that would be used when the existing trail is flooded by high water and left open for use when water recedes. A total of approximately 3.2 miles would be constructed for segments A-D. Actions for trail relocations may include one or more of following activities: clearing of vegetation and obstructions within three feet on both sides of the center line of each alignment and ten foot vertical distance, excavation of 36 inch wide trail tread using primitive methods such as hand tools and/or horse and mule, installation of rolling dips, and surface hardening as needed for resource protection.

Grubb Ridge Trailhead would be expanded to accommodate 10 to 15 additional vehicles. The existing parking lot accommodates 7-10 vehicles. The expansion along with existing parking would accommodate approximately 20 vehicles at one time. Clearing of vegetation for the parking lot would take place on less than .25 acres. Larger trees will

be left to provide buffering between proposed parking area and road while smaller poles and saplings will be removed from proposed parking area.

The Grubb Ridge trailhead is located along Tower Ridge Road about 4.4 miles east of Highway 446. The proposed parking lot expansion would involve a small flat area that used to be a homestead across the road from the existing trailhead.

### **ALTERNATIVE 3**

With this alternative trail structures such as puncheons or turnpikes would be installed at Sycamore (A) and Axsom Branch Loops (B), relocate the trail segment at Saddle Creek Crossing (C), and Bass Pond (D). For both segments C and D, existing trails would be rehabilitated. Actions for installation of puncheons or turnpikes would include importing man made materials (i.e., crushed rock, lumber, and fastening devices), assembly, and placement over existing trail tread. Actions for alternate route and relocation construction would be similar as those for trail relocation as described under Alternative 2.

The Parking lot at Grubb Ridge would be expanded to accommodate an additional 15 to 20 vehicles. This expansion would occur in the same location as Alternative 2.

## COMPARISON OF ALTERNATIVES

Table 4 displays a summary of the features of each alternative and the effects in response to the issues, purpose and need for action, and management direction.

<b>Table 4 Summary of Feature and Effects of Alternatives</b>			
<b>SYCAMORE LOOP SITE (SEGMENT A)</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Features of Alternative</b>	Routine Maintenance	Relocate Trail Upslope of Existing Trail (0.3 miles)	Construct and Install Walkway over existing trail segment.
<b>Effects on access to favorite places and watering opportunities</b>	No Effect	No Effect	No Effect
<b>Effects on types and amount of use</b>	No Effect	No Effect	No Effect
<b>Effects on wilderness character and solitude</b>	No Effect	No Effect	No Effect
<b>Effects on soil erosion and sedimentation.</b>	No change from current conditions.	Reduced long-term disturbance and no increase in risk of erosion and sedimentation.	Reduced long-term disturbance and no increase in risk of erosion and sedimentation.
<b>Effects on Car-animal Collisions and Interior Forest Habitat</b>	No Effect	No Effect	No Effect
<b>Purpose and Need for Action</b>	Least Responsive	Most Responsive	Responsive
<b>Management Direction</b>	Least Responsive	Most Responsive	Responsive
<b>AXSOM BRANCH (SEGMENT B)</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Features of Alternative</b>	Routine Maintenance	Relocate Trail Upslope of Existing Trail (1.1 miles)	Construct and Install Walkway over existing trail segment.
<b>Effects on access to favorite places and watering opportunities</b>	Use would be limited about 9 times over 15 years	Use would be limited about 1 time over 15 years	Use would be limited about 9 times over 15 years
<b>Effects on types and amount of use</b>	No Effect	No Effect	No Effect
<b>Effects on wilderness character and solitude</b>	No Effect	No Effect	No Effect
<b>Effects on soil erosion and sedimentation.</b>	Trail would remain in eroded, deeply entrenched old road. Relocation to Berks-Weikert soils would not occur.	Reduced long-term disturbance and no increase in risk of erosion and sedimentation.	Reduced long-term disturbance and no increase in risk of erosion and sedimentation.
<b>Car-animal Collisions and Interior Forest Habitat</b>	No Effect	No Effect	No Effect
<b>Purpose and Need for Action</b>	Least Responsive	Most Responsive	Responsive
<b>Management Direction</b>	Least Responsive	Most Responsive	Responsive
<b>GRUBB RIDGE - SADDLE CREEK CROSSING (SEGMENT C)</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Features of Alternative</b>	Routine Maintenance	Perform heavy maintenance to harden existing trail. Construct additional route upslope on Frog Pond Ridge for use during high water.	Relocate Trail Upslope of Existing Trail on Frog Pond Ridge (1.5 miles).
<b>Effects on access to favorite places and watering opportunities</b>	This trail would continue to close itself during high water. Opportunities to water horses would not change.	Trail access would be provided during high water. Opportunities to water horses would not change.	Trail access would be provided during high water. Opportunities to water horses would be reduced when stream flow is low.
<b>Effects on types and amount of use</b>	No Effect	No Effect	No Effect

<b>GRUBB RIDGE - SADDLE CREEK CROSSING (SEGMENT C) (Continued)</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Effects on wilderness character and solitude</b>	No Effect	Negligible effects from addition of 1.5 miles of trail	Negligible effects from addition of 1 mile of trail
<b>Effects on soil erosion and sedimentation.</b>	Risks of erosion and sedimentation from avoiding Berks-Weikert soils offset by adverse effects of repeated flooding and continued use.	Reduced long-term disturbance and negligible increased risk of erosion and stream sedimentation.	Similar effects to Alternative 2.
<b>Car-animal Collisions and Interior Forest Habitat</b>	No Effect	No Effect	No Effect
<b>Purpose and Need for Action</b>	Least Responsive	Most Responsive	Responsive
<b>Management Direction</b>	Least Responsive	Most Responsive	Responsive
<b>COPE HOLLOW - BASS POND (SEGMENT D)</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Features of Alternative</b>	Routine Maintenance	Relocate Trail to the northeast side of Bass Pond (0.3 miles)	Relocate trail to southeast of existing trail, away from Bass Pond
<b>Effects on access to favorite places and watering opportunities</b>	Use of unauthorized access to Bass Pond would continue.	Authorized access to Bass Pond would be provided.	Use of unauthorized access to Bass Pond would continue.
<b>Effects on types and amount of use</b>	No Effect	No Effect	No Effect
<b>Effects on wilderness character and solitude</b>	No change from current conditions.	Use of Bass Pond is not expected to increase. Campsite and fire ring would be moved to over 100 feet from pond and trail.	No change from current conditions.
<b>Effects on soil erosion and sedimentation.</b>	No change from current conditions.	Reduction in soil disturbance due to providing one route to pond, and closing trail where widening has occurred would off-set any potential increase in risk of erosion from trail segment on downhill side and adjacent to pond.	Reduced short and long-term disturbance since the widened trail would be abandoned, there would be no trend towards further widening. Use of unauthorized trails to Bass Pond from the new alignment would continue.
<b>Car-animal Collisions and Interior Forest Habitat</b>	No Effect	No Effect	No Effect
<b>Purpose and Need for Action</b>	Least Responsive	Most Responsive	Responsive
<b>Management Direction</b>	Least Responsive	Most Responsive	Responsive
<b>GRUBB RIDGE PARKING LOT EXPANSION</b>			
<b>Element</b>	<b>Alternatives</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
<b>Features of Alternative</b>	No Action	Expand parking lot to accommodate 10 to 15 additional vehicles.	Expand parking lot to accommodate 15 to 20 additional vehicles.
<b>Effects on access to favorite places and watering opportunities</b>	No Effect	No Effect	No Effect
<b>Effects on types and amount of use</b>	During peak use, visitors would continue to search for parking or park illegally. No attraction for livestock users.	Alternative would meet current use needs 96% of the time. No attraction for livestock users.	Alternative would meet current use needs 100% of the time. No attraction for livestock users.
<b>Effects on wilderness character and solitude</b>	No Effect	Slightly decrease opportunities for solitude	Moderately decrease opportunities for solitude
<b>Effects on soil erosion and sedimentation.</b>	No Effect	Disturbance less than 0.25 acres	Disturbance of about 0.5 acres
<b>Car-animal Collisions and Interior Forest Habitat</b>	No Effect	Negligible Effects	Slightly greater effect than with Alternative 2
<b>Purpose and Need for Action</b>	Least Responsive	Most Responsive	Responsive
<b>Management Direction</b>	Least Responsive	Most Responsive	Responsive

## ALTERNATIVES CONSIDERED BUT NOT IN DETAIL

The following alternative was considered and dropped from detailed consideration, as discussed below.

**Alternative 4 - Trail to dispersed site above Saddle Creek:** Construction of a short trail to a dispersed recreation site above Saddle Creek was considered. The objective was to protect soil and water resources by closing the steep, eroding, unauthorized route to this site, and to provide an authorized route in a more suitable location.

Due to several factors, this trail was dropped from the proposal. This trail would have increased the total mileage of trails within the wilderness. It was not included in the 1993 recommendations of The Citizens' Wilderness LAC Task Force (U.S. Department of Agriculture, Forest Service 1993). Finally, since the trail would have provided access to sensitive ecosystems in the vicinity, it was dropped from further consideration.

## OTHER ACTIVITIES IN THE PROJECT AREA

The following activities are considered as past or foreseeable future actions included in the cumulative effects analysis for this EA.

- Routine and heavy maintenance of existing system of designated trails.
- Maintenance of access roads to cemeteries.
- Maintenance of existing cemeteries by private groups and individuals.
- Closure of user-created trails.
- Closure of illegal or overused campsites.
- Human uses, including hiking, horseback riding, and camping.

All current National Forest System lands before being acquired by the United States were in private ownership. In the past, these landowners practiced: conversion of woodlands to agricultural land, crop production, livestock grazing, timber harvesting, and abandonment of farming. Abandoned Farms led to fields and forests in various successional stages and conditions. Where agricultural practices led to excessive erosion, farms were eventually abandoned. Other farms were abandoned during the Second World War. Past activities on National Forest System lands included: timber harvesting, site preparation, planting of new stands, and construction of roads, trails, camp sites, and earthen dams.

## AFFECTED ENVIRONMENT

### FAVORITE PLACES AND WATERING OPPORTUNITIES

Access to favorite places is provided by 36 miles of trail from a total of five access points. Hiking and horseback riding occur over 31 miles of trail and five miles of trail are available for hiking only.

From topographic maps, it appears that the Saddle Creek (Segment C) crossing floods when the pool elevation of Monroe Lake exceeds 545 feet. The monthly maximum water level of Monroe Lake exceeded 545 feet 34 times over the past 15 years. Water levels in excess of 545 feet occur most frequently during the months of March through June. Water levels remained at or above 545 feet in 1996 from April 29 through July 17, and in 1998 from April 17 through July 26. Water levels did not reach 545 feet during five of the past 15 years.

Saddle Creek (Segment C) crossing is impassable and the stream crossings in the Axsom Branch (Segment B) bottoms are flooded when the pool elevation of Monroe Lake reaches 550 feet. According to data from the U.S. Army Corps of Engineers, the monthly maximum water level has reached or exceeded 550 feet nine times during the past 15 years. The pool elevation stayed above 550 feet for nearly two months in 1996. Water levels of Monroe Lake did not reach 550 feet in 11 of the past 15 years. Water levels reached 555 feet once during this time.

Saddle Creek (Segment C) and Axsom Branch (Segment B) are favorite places for wildflower viewing and horse watering. Bass Pond near the Cope Hollow Loop Trail (trail Segment D) is a favorite place for horse watering. There is one established campsite within 75 feet of the pond. There is currently no authorized trail to this site so use is unmanaged.

### WILDERNESS CHARACTER AND SOLITUDE

The Forest Plan has limited the number of trailheads that provide access to the wilderness to five to provide "a recreation experience that offers a degree of solitude and challenge" (*Forest Plan* Page 2-38).

### SOIL EROSION AND SEDIMENTATION

Proposed Trail Segment A lies within the Sycamore Branch drainage, a tributary of the South Fork of Salt Creek. Trail Segment B is within the Axsom Branch drainage and Segment C is within the Saddle Creek drainage, both of which are tributaries of the Middle Fork of Salt Creek. These tributaries

flow into Monroe Lake. Trail Segment D is within the Cope Hollow drainage, a tributary of Little Salt Creek. The proposed parking lot expansion at Grubb Ridge is located at the head of an unnamed tributary of the Taylor Branch of Hunter Creek, which also flows into Little Salt Creek.

Average annual rainfall for this area is 42-44 inches using data from 1961 to 1990. Intense summer thundershowers are common.

Soils within the project area are rated according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features such as wetness, slope gradient, and texture of the surface layer. Susceptibility to flooding is considered. **Table 5** presents a summary of the soils associated with the five proposed action sites. A brief description of the soils, the degree of soil limitation along with the most restrictive soil feature that the degree of soil limitation is based on and how the limitation can be overcome is presented. The information provided in this table is referenced from the USDA Soil Conservation Service (this agency is now referred to as the Natural Resource Conservation Service) Soil Survey of Monroe County, Indiana (USDA 1981).

Soil Map Units	Features (USDA 1981)
Tilsit silt loam (TIB), 2 to 6 percent slopes	Moderately well drained about 9 inches thick to a fragipan about 39 inches thick with bedrock at 58 inches. Gently sloping soils of loess-covered uplands. Available water capacity is moderate to slow. Permeability is moderate above and very slow within fragipan, resulting in a perched water table 1.5 to 2.5 feet deep from January to April. Severe: erodes easily. For trails additional cross drainage and possibly hardening trail surface to avoid easily eroded soil surface layers.
Wellston-Gilpin silt loams (WeC) - 6 to 20 percent slopes	Well drained silt loam 5 inches thick, subsoil 35 inches thick with bedrock at 40 inches on ridge tops and side slopes of the uplands. Available water capacity low to moderate. Permeability is moderate. Surface runoff is medium to rapid. Surface layer organic matter content is low. Severe: erodes easily. Build trail gradient to standard (maximum grade of 10 percent in loam soils) to avoid excessive erosion.

## PARKING

As mentioned previously, there are a total of five access points for visitors of the Charles C. Deam Wilderness Area. **Table 6** provides a summary of the parking facilities that currently provide access to the Wilderness Area and how many vehicles can be accommodated.

Soil Map Units	Features (USDA 1981)
Berks-Weikert complex (BKF) - 25 to 75 percent slopes	Well drained about 4-6 inches thick, subsoil 9-18 inches thick with bedrock at 10 to 38 inches on side slopes of the uplands. Available water capacity low or very low. Permeability is moderate or moderately rapid. Surface runoff is very rapid. Surface layer organic matter content is moderate. Severe: slope gradient. Build trail gradient to standard (maximum grade of 10 percent in loam soils) to avoid excessive erosion.
Burnside silt loam (Bu)	Well drained about 9 inches thick, subsoil 25 inches thick with bedrock at 12 to 40 inches at the upper end of drainage ways. Available water capacity moderate. Permeability is moderate. Surface runoff is slow. Surface layer organic matter content is low. Severe: erodes easily. Trail erodes easily because it is subject to flooding.
Caneyville silt loam (CaD) - 12 to 18 percent slopes	Well drained about 5 inches thick, subsoil 30 inches thick with bedrock at 35 inches soil on side slopes of uplands. Available water capacity low. Permeability is moderately slow. Surface runoff is rapid. Surface layer organic matter content is moderate. Severe: erodes easily. Build trail gradient to standard (maximum grade of 10 percent in loam soils) to avoid excessive erosion.

Access Point	Features	Vehicle Capacity
<b>Blackwell</b>	10-11 acres of grass with 5 corrals, hitching rails, restrooms, covered picnic area, handicapped access loading ramp for horses.	100
<b>Grubb Ridge</b>	Interpretive Signs	7-10
<b>Hayes</b>	No Facilities	4
<b>Hunter Creek</b>	No Facilities	2
<b>Terrell Ridge</b>	Interpretive Signs and Tower viewing	35-40

The Hoosier National Forest provides excellent facilities for horse trailers and livestock users at Blackwell and Hickory Ridge (not a wilderness access point). Horse users are occasionally observed at the other parking facilities but are primarily attracted to locations designed to accommodate trailers and provide other amenities such as restrooms and corrals.

The Grubb Ridge Parking Facility is accessed by Tower Ridge Road. This road bisects the Wilderness and is an arterial road that provides access for the communities of Houston to Bloomington, Indiana as well as providing primary

access to the Wilderness. This road accommodates approximately 150 vehicles per day (Fahl 2001). The road is very narrow with gravel surface and vehicles are observed to exceed safe travel speed of 25 miles per hour. With narrow shoulders, walking or horseback riding along this road can be unsafe.

Currently there is enough parking at the existing Grubb Ridge Trailhead to accommodate 7-10 vehicles. At certain times of the year, especially on weekends, there is not enough parking for all those who wish to go to the wilderness or the local cemeteries. Visitors often drive from trailhead to trailhead in search of a parking spot, and some people park along Tower Ridge Road. Parking along the road is illegal and unsafe. Over 100 Violation Notices and 150 Warning Notices have been issued for illegal parking on Tower Ridge Road since August 1999 (Chamberlain 2001). Grubb Ridge also provides parking for families visiting cemeteries within the wilderness. As described under the *Management Direction* section of this document, the Forest Service has a legal obligation to provide safe parking for cemetery visitors. **Figure 3** displays use patterns recorded for the Grubb Ridge Parking facility.

Year	Weekday Count	Weekend Count
1998	3	6
1999	1	6
2000	1	8

Yearly averages for the last three years do not show any distinct changes in use trends. Weekend counts were higher in the year 2000 and weekday counts were higher in 1998. Uses appear more stable over the last three years. A memorandum that summarized wilderness use for 1998 indicated that Recreational Visitor Days (RVDs) had more than doubled from 5,500 RVDs in 1996 to 11,610 RVDs in 1998 (Kissel 1998).

## ENVIRONMENTAL EFFECTS

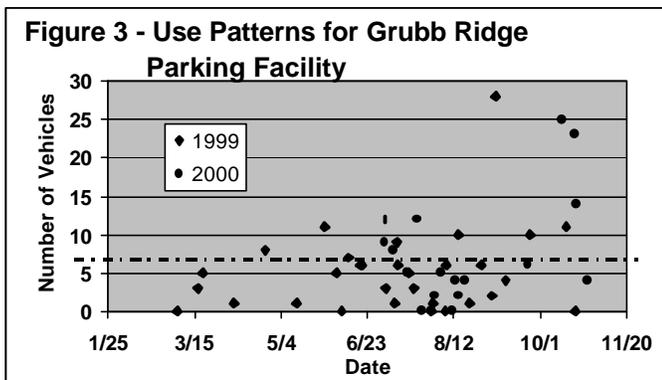
### EFFECTS COMMON FOR TRAIL SEGMENTS A-D

**Parking:** None of the alternative actions proposed for trail segments at any of the sites would affect parking.

**Soil Erosion and Sedimentation:** Stream crossings and the approaches on each side of the stream can cause erosion and stream sedimentation. When approaching and crossing a stream, trail users can loosen sediment from the banks or stir up sediment in the channel, which then becomes suspended in the water, is carried downstream and later deposited on the stream bottom.

All alternatives would apply mitigation measures as described previously that would reduce risk of erosion and stream sedimentation and provide protection for water quality and aquatic habitats. Construction and maintenance of trails to recommended standards would ensure that excessive erosion or other detrimental effects to soil and water resources would not occur.

**ALTERNATIVE 2:** Overall soil disturbance and movement would be reduced by relocating trail segments A-D upslope, away from flat areas where water accumulates, providing improved drainage. Drier trails are more stable with less risk of erosion and sedimentation. Risk of trail widening that occurs as trail users leave the trail to seek dryer ground would be reduced. This alternative would repair damage caused by trail use, reduce risk of soil



As shown in the above figure use of the Grubb Ridge Parking Facility varies greatly throughout the year. Although parking capacity is exceeded in the summer, peak use occurs in the fall. Ten or more vehicles were observed at Grubb Ridge 21 percent of the time. The dashed line is placed in **Figure 3** to show that seven or more vehicles were observed 32 percent of the time.

**Table 7** presents yearly averages taken from CCDW Vehicle Count Summaries for vehicle parking at Grubb Ridge.

erosion, and maintain a firm tread on trails within the wilderness.

### **Car-Animal Collisions and Interior Forest Habitat**

None of the trail work in any of the alternatives is expected to affect car-animal collisions.

Since it is anticipated that few, if any, overstory trees will need to be cut for trail relocations the effects to interior forest habitat are expected to be minimal.

### **EFFECTS BY LOCATION**

This section presents the environmental effects of implementing each alternative action at each site in relation to the issues, purpose and need for action, and management direction described previously.

#### **SYCAMORE LOOP (SEGMENT A)**

##### **Favorite places and Watering Opportunities:**

None of the alternatives are expected to affect favorite places and watering opportunities at this location.

##### **Wilderness Character and Solitude:**

None of the alternatives are expected to affect wilderness character and solitude at this location.

##### **Soil Erosion and Sedimentation:**

ALTERNATIVE 1: Much of the trail on the south side of the loop is located on seasonally flooded bottomland soil. When portions of the trail become flooded or too muddy for hikers to use, it is likely they would create and use alternate trails to bypass the wet sections. These user created trails would impact soils off the main trail system.

The existing trail is located on 0 to 10 percent sideslope. This provides poor drainage and causes pooling of water on the trail.

ALTERNATIVE 2: The proposed relocation would move the trail above the seasonally flooded bottomland soil to the well-drained colluvial soil at the base of the side slope. This would reduce risk of erosion and sedimentation from the existing situation. The trail would be located on a sideslope of 10-20 percent to provide drainage while

minimizing risk of erosion. The trail grade would not exceed 10 percent.

ALTERNATIVE 3: This alternative would provide for a hardened, raised trail with improved drainage. The risk of trail widening and use of alternate trails would be reduced. This would reduce risk of erosion and sedimentation from the existing situation.

##### **Response to Purpose and Need for Action:**

Alternative 2 is the most responsive to the purpose and need for action. Both Alternatives 2 and 3 accomplish Objectives 1, 2, 3, and 4 to a greater extent than Alternative 1 by providing firm travel tread without excessive muddiness, increasing user safety, reducing unauthorized and unmanaged trail establishment and maintaining trails as open for as much of the year as possible. Alternative 2 is the most responsive to the purpose and need for action since it reroutes the trail from a location that periodically floods. Alternative 2 also is the most responsive to Objective 5, providing the most cost effective and sustainable trail program with a long-term low maintenance solution to the trail issues at this location.

##### **Response to Management Direction:**

Although all alternatives are in compliance with management direction, Alternative 2 is the most responsive. This alternative provides the most flexibility in trail design to meet a full range of human, physical, and social needs and desires. This alternative provides for the lowest standard of maintenance while still protecting resources and maintaining adequate drainage. Alternative 3 would require the use of man made materials in the wilderness. Importing of man made materials into the wilderness is considered only if other alternatives are not practical or feasible.

#### **AXSOM BRANCH (SEGMENT B)**

##### **Favorite places and Watering Opportunities:**

ALTERNATIVE 1: Existing trails would continue to receive routine maintenance to prevent visitor use from damaging the trail tread and stream crossings. Riders could continue to use the crossings at Axsom Branch for resting, watering horses, and viewing wildflowers.

Portions of the trail system would be closed whenever backwater from Monroe Lake floods the crossings. Since no off-trail riding is permitted in the wilderness, the flooding of stream crossings could

result in the closure of about 1.1 miles of Axsom Branch loop, causing loop type access to be unavailable until water recedes. Riders discovered off the trail system could be fined for illegal use.

Axsom Branch stream crossings would become impassable when lake levels reach 550. Based on past trends, this is expected to occur about nine times over 15 years.

ALTERNATIVE 2: Trail Segment B rises out of the bottomland along the southern fork of Axsom Branch, climbs the hill slope in a few switchbacks and descends to cross the southeastern fork of Axsom Branch further upstream from the present crossing. This crossing would provide access to water for horses. Opportunities for wildflower viewing, characteristic of bottomlands, would be maintained. In addition, the rerouted trail would provide more variety than the existing trail, by climbing and descending the slope, rather than staying in the bottomland. Different habitat might provide an opportunity to see different kinds of flowering plants on the slopes. Trail Segment B continues up the ridge to rejoin the existing trail near the junction with the Sycamore Loop. The new trail segment would move the trail out of the deeply entrenched old road that goes straight up the hill, providing a more aesthetically pleasing route along the slope.

Relocating a portion of the Axsom Branch trail as proposed by this alternative would reduce the number of stream crossings from five to two. Both crossings on proposed Segment B would be about 555 feet in elevation. Based on past trends, these crossings are expected to flood about once every 15 years.

ALTERNATIVE 3: This alternative would not change access to favorite places or watering opportunities. There would be no opportunities for improved views or viewing of different habitats. The number of stream crossings would remain 5 and crossings would become impassable when lake levels reach 550. Based on past trends, this is expected to occur about 9 times every 15 years.

#### **Wilderness Character and Solitude:**

None of the alternatives are expected to affect wilderness character and solitude at this location.

#### **Soil Erosion and Sedimentation:**

ALTERNATIVE 1: The eroded, deeply entrenched old road that serves as a portion of the trail to Axsom Branch would remain. Sedimentation from some of the numerous stream approaches and

crossings of Axsom Branch will continue. The trail would remain on the flood-prone bottomland soils. Relocation to the steep Berks-Weikert soils would not occur.

The existing trail is located on 0 to 10 percent sideslope. This provides poor drainage and causes pooling of water on the trail.

ALTERNATIVE 2: This alternative would reroute the trail from an eroded, deeply entrenched old road to an upslope location where better drainage can be achieved. The trail would be located on a sideslope of 20-30 percent to provide drainage and the risk of erosion would be minimized through use of mitigation measures as described previously and by using natural breaks in slope when locating alignment for rerouted trail. The trail grade would not exceed 10 percent.

As recommended by the Natural Resource Conservation Service (NRCS) (see **Table 5**) and FSH 2309.18 the new trail would be built with the trail gradient to standard (maximum grade of 10 percent in loam soils), follow the natural contours of the land to take advantage of the natural drainage, and roll the trail grade for natural-appearing drainage to the extent possible to overcome the severe limitation of slope steepness and the easily eroded soils. The trail would be designed with switchbacks to connect the new upslope trail with the existing alignment. These switchbacks would reduce the slope length and trail steepness further reducing risk of soil erosion and sedimentation of the stream. With implementation of mitigation measures as described previously, the severe limitations of slope steepness and easily eroded soils would not be increased by this action.

This Alternative would reduce the number of stream crossings in the bottomland along the Axsom Branch from five to two crossings. This reduction would benefit soil and water resources, since stream crossings and approaches are particularly vulnerable to erosion.

ALTERNATIVE 3: This alternative would construct a walkway so that drainage can be achieved at the same site. This alternative would not relocate the trail on the soils of the Berks-Weikert complex. The number of stream crossings would remain the same.

This alternative would keep the trail in the deeply entrenched old road that goes straight up the hill.

#### **Response to Purpose and Need for Action:**

Alternative 2 is the most responsive to the purpose and need for action. Both Alternatives 2 and 3 accomplish Objectives 1, 2, 3, and 4 to a greater extent than Alternative 1 by providing firm travel tread without excessive muddiness, increasing user safety, reducing unauthorized and unmanaged trail establishment and maintaining trails as open for as much of the year as possible. Alternative 2 is the most responsive to the purpose and need for action since it relocates the trail from a location that periodically floods. Alternative 2 also is the most responsive to Objective 5, providing the most cost effective and sustainable trail program with a long-term low maintenance solution to the trail issues at this location.

### **Response to Management Direction:**

Although all alternatives are in compliance with management direction, Alternative 2 is the most responsive. This alternative provides the most flexibility in trail design to meet a full range of human, physical, and social needs and desires. This alternative provides for the lowest standard of maintenance while still protecting resources and maintaining adequate drainage. Alternative 3 would require the use of man made materials in the wilderness. Importing of man-made materials into the wilderness is considered only if other alternatives are not practical or feasible.

### **GRUBB RIDGE - SADDLE CREEK (SEGMENT C)**

#### **Favorite places and Watering Opportunities:**

ALTERNATIVE 1: The existing trails would continue to receive routine maintenance to prevent resource damage at the crossings. Riders could continue to use the crossings at Saddle Creek for resting, watering horses, and viewing wildflowers.

Saddle Creek crossing floods when water level of Monroe Lake exceeds 545 feet. The crossing becomes impassable when water level reaches 550 feet in elevation. Based on past trends, Saddle Creek crossing is expected to flood 34 times over 15 years and become impassable nine times over 15 years.

ALTERNATIVE 2: The proposed action involves closure of the Saddle Creek crossing during high water and the creation of two new crossings further upstream on the forks of Saddle Creek. The new stream crossings would have water for the horses, and also many wildflowers. The trail segment on the west side of Saddle Creek would remain open to connect with the Hayes trail, so wildflowers may be

viewed along this section of trail as in the past. Since the additional route goes up the slope and around Frog Pond Ridge instead of staying in the bottomland, it may provide opportunities to see different types of wildflowers and plants that grow on slopes and ridges.

Closure of Grubb Ridge loop during high water can often last for a month or more. Seasonal closure of this popular route without another trail option encourages unauthorized use off the trail system to bypass the closure and continue on the loop.

When water recedes, the existing trail would reopen and the proposed additional route would remain open providing a shorter loop opportunity from both Blackwell and Hayes trailheads. Access to wildflowers and water locations for horses would be increased.

According to data from the U.S. Army Corps of Engineers, the crossing at 555 feet flooded only once in the past 15 years and the other crossing at 560 feet has not flooded at all. Based on this data, trail access at this location would be improved over Alternative 1 with closure due to flooding at one site every 15 years.

ALTERNATIVE 3: The following effects would be added to those described for Alternative 2. An additional 1.5 miles of trail in the wilderness would be created without opening any new areas for hiking or riding. Saddle Creek crossing, which has been identified as a favorite place for resting, viewing wildflowers, and watering horses, would not be accessible.

Closure due to high water would require constant monitoring of water levels in Monroe Lake to determine when the water level exceeded the standard.

#### **Wilderness Character and Solitude:**

ALTERNATIVE 1: This alternative would have no effect of wilderness character and solitude.

ALTERNATIVE 2: This alternative would add 1.5 miles of additional length to the wilderness trail system with Segment C. Effects from this increase in trail miles on wilderness character and solitude are expected to be negligible.

ALTERNATIVE 3: This alternative would add 1.5 miles additional length to the wilderness trail system. Effects from this increase in trail miles on wilderness character and solitude are expected to be negligible.

#### **Soil Erosion and Sedimentation:**

ALTERNATIVE 1: Relocation of the trail onto the steep Berks-Weikert soils would not occur. Adverse effects of repeated flooding and continued use of the crossing in spite of wetness and high water would offset reduced risk of soil erosion and stream sedimentation from avoiding the steep Berks-Weikert soils. The creation and use of unauthorized alternate trails to bypass high water at the Saddle Creek crossing could impact soil and water resources.

The existing trail is located on 0 to 10 percent sideslope. This provides poor drainage and causes pooling of water on the trail.

ALTERNATIVE 2: This alternative adds 1.5 miles of trail on the soils of the Berks-Weikert complex. As recommended by NRCS (see **Table 5**) the new trail would be built on the contour, use of natural drainage and rolling the grade to the extent possible to avoid excessive erosion. The trail would be designed with switchbacks to connect the new upslope trail with the existing alignment. These switchbacks would reduce the slope length and trail steepness further reducing risk of soil erosion and sedimentation. The trail would be located on a sideslope of 20-30 percent to provide drainage and the risk of erosion would be minimized through use of mitigation measures as described previously and by using natural breaks in slope when locating alignment for rerouted trail. The trail grade would not exceed 10 percent.

The existing trail would be hardened in muddy areas to reduce potential erosion and sedimentation. The trail would be improved to meet current Forest Service Standards for trails in wilderness.

With implementation of mitigation measures as described previously, the construction of switchbacks, and designing this alignment to follow slope contour, use of natural drainage and roll trail grade erosion hazard would not be increased by this action. Based on past evidence and current experience with soils in this area, the soil scientist has determined that adding trail Segment C to Frog Pond Ridge would have no long-term detrimental effects to soil and water resources, as long as the standard mitigation measures are applied.

ALTERNATIVE 3: Alternative 3 would have similar effects as Alternative 2.

#### **Response to Purpose and Need for Action:**

Alternative 2 is the most responsive to the purpose and need for action. Both Alternatives 2 and 3

accomplish Objectives 1, 2, 3, and 4 to a greater extent than Alternative 1 by providing firm travel tread without excessive muddiness, increasing user safety, reducing unauthorized and unmanaged trail establishment and maintaining trails as open for as much of the year as possible. Alternative 2 is the most responsive to the purpose and need for action since the additional trail will not be constructed in a location that periodically floods, while providing access to the Charles C. Deam Wilderness and protection of the resources. Alternative 2 also is the most responsive to all the Objectives listed on Page 1.

#### **Response to Management Direction:**

Although all alternatives are in compliance with management direction, Alternative 2 is the most responsive. This alternative provides the most flexibility in trail design to meet a full range of human, physical, and social needs and desires. This alternative provides for the lowest standard of maintenance while still protecting resources and maintaining adequate drainage.

#### **COPE HOLLOW - BASS POND (SEGMENT D)**

#### **Favorite places and Watering Opportunities:**

ALTERNATIVE 1: This alternative would have no effect on favorite places and water opportunities.

ALTERNATIVE 2: This alternative is expected to improve ability of the Forest Service to manage use at Bass Pond. Based on past observation, use of the pond is expected to continue and establishing a system trail that accesses the pond will reduce the creation of social trails and unauthorized use to the pond.

ALTERNATIVE 3: This alternative would not improve the ability of the Forest Service to manage for use of the Bass Pond. The system trail would be moved further from the pond from its current location. Use of the pond is expected to continue and more volunteer trails are likely to be established to access the pond from this proposed alignment.

#### **Wilderness Character and Solitude:**

ALTERNATIVE 1: This alternative would have no effect on wilderness character and solitude.

ALTERNATIVE 2: The proposed trail will route wilderness users past the Bass Pond. This action is designed to correct a trail issue and not improve access or change the recreational opportunity in this area. The Bass Pond is a popular place and since

there would be no change in the recreational experience offered, use trends are not expected to change as a result of this alternative. The existing camp would be moved to a location that is at least 100 feet from the pond and 100 feet from the new trail alignment. Any increase in use adjacent to the pond on wilderness character and solitude is likely to be offset by moving the camp. Opportunities for wilderness experiences and solitude are expected to continue with very little change as a result of this alternative.

ALTERNATIVE 3: This alternative would not route users past the Bass Pond. Use trends are not expected to change with this alternative so effects on wilderness character and solitude are minimal.

#### **Soil Erosion and Sedimentation:**

ALTERNATIVE 1: The poorly drained section of trail would continue to be used. This would result in continued trail widening. Some portions of this segment are six to twenty feet wide where trail width is only intended to be two feet. There appears to be a trend that the trail would continue to be widened as users seek dryer areas for travel. The existing trail is located on 0 to 10 percent sideslope. This provides poor drainage and causes pooling of water on the trail.

ALTERNATIVE 2: This trail relocation would move 0.3 miles of trail to a new location. Short-term disturbance for the new alignment would occur over about 0.11 acres. This would result in reduced short and long-term disturbance since the widened trail would be abandoned, there would be no trend towards further widening, and use of unauthorized trails to Bass Pond from the existing trail alignment would be discontinued.

The trail would be located on a sideslope of 10-20 percent to provide drainage and the risk of erosion would be minimized through use of mitigation measures as described previously and by using natural breaks in slope when locating alignment for rerouted trail. The trail grade would not exceed 10 percent.

A short segment of trail on the lower side of the Bass Pond would be constructed on 20 to 30 percent sideslope. The trail would be designed with a gradient of less than 10 percent and would be well drained to minimize risk of erosion on the fill slope of the pond.

ALTERNATIVE 3: This trail relocation would move 0.3 miles of trail to a new location. Short-term disturbance for the new alignment would occur over about 0.11 acres. This would result in reduced short and long-term disturbance since the widened trail

would be abandoned, there would be no trend towards further widening. Use of unauthorized trails to Bass Pond from the new alignment would continue. The establishment of new trails between the new alignment and the old alignment is likely since trail users area still going to access the Bass Pond.

The proposed trail location is on 0 to 10 percent sideslope. This would provide poor drainage and cause pooling of water on the trail.

#### **Response to Purpose and Need for Action:**

Alternative 2 is the most responsive to the purpose and need for action. Both Alternatives 2 and 3 accomplish Objectives 1, 2, 4, and 5 to a greater extent than Alternative 1 by providing firm travel tread without excessive muddiness, increasing user safety. Alternative 2 is the most responsive to Objective 3 since it reduces unauthorized and unmanaged trail establishment.

#### **Response to Management Direction:**

Although all alternatives are in compliance with management direction, Alternative 2 is the most responsive. This alternative provides the most flexibility in trail design to meet a full range of human, physical, and social needs and desires. Both Alternative 2 and 3 provide solutions to drainage problems but Alternative 2 also responds to current use needs by providing for authorized access to the Bass Pond.

#### **GRUBB RIDGE PARKING LOT EXPANSION**

#### **Favorite places and Watering Opportunities:**

None of the alternatives for the parking lot expansion are expected to affect favorite places and watering opportunities.

#### **Parking:**

ALTERNATIVE 1: During certain times of the year, especially weekends and hunting seasons, National Forest visitors would not find enough parking for all those who wish to visit the wilderness or local cemeteries. With this alternative, visitors would continue to drive from trailhead to trailhead searching for a parking place, and some would park illegally along the road.

With excellent facilities for horse trailers and livestock users available at Blackwell and Hickory

Ridge, there is currently no reason for horseback riders to be attracted to the Grubb Ridge access point, which does not have accommodations for horse trailers.

ALTERNATIVE 2: During high use times of the year, especially weekends and hunting seasons, there would be parking space for 10 to 15 more vehicles at Grubb Ridge for those who wish to visit the wilderness or local cemeteries. This alternative would reduce the likelihood of visitors driving from trailhead to trailhead in search of a parking place and would reduce the incidence of illegal parking beside the road.

The proposed parking lot expansion would not be designed to accommodate horse trailers. With excellent facilities for horse trailers and livestock users available at Blackwell and Hickory Ridge and no accommodation for horse trailers in the proposed parking expansion at Grubb Ridge, there is no reason for horseback riders to be attracted to the Grubb Ridge access point currently or with parking expansion.

Cumulative effects of this alternative would result in a 6-10% increase in parking space for wilderness and cemetery access.

ALTERNATIVE 3: During high use times of the year, especially weekends and hunting seasons, there would be parking space for 15 to 20 more vehicles at Grubb Ridge for those who wish to visit the wilderness or local cemeteries. This would accommodate all but the highest use days and nearly eliminate the likelihood of visitors driving from trailhead to trailhead in search of a parking place and would nearly eliminate the incidence of illegal parking beside the road.

The proposed parking lot expansion would not be designed to accommodate horse trailers. With excellent facilities for horse trailers and livestock users available at Blackwell and Hickory Ridge and no accommodation for horse trailers in the proposed parking expansion at Grubb Ridge, there is no reason for horseback riders to be attracted to the Grubb Ridge access point currently or with parking expansion.

Cumulative effects of this alternative would result in a 9-14% increase in parking space for wilderness and cemetery access.

#### **Wilderness Character and Solitude:**

ALTERNATIVE 1: There would be no effect on wilderness character and solitude. In this

alternative, parking at the Grubb Ridge trailhead would remain the same as it is now. The no-action alternative would not increase the number of wilderness visitors in this portion of the wilderness, nor would it decrease opportunities for solitude. Traffic on Tower Ridge Road would remain the same, as would access to the center portions of the wilderness. Opportunities to experience solitude and challenge would not change from those currently available. Wilderness visitors would continue having difficulty finding a place to park at certain times of the year.

The existing parking facility at Grubb Ridge trailhead is designed to accommodate cars and trucks rather than horse trailers. Routine maintenance is adequate to maintain the existing trails near the trailhead at the current level of use. The no-action alternative would not be expected to increase horse use or necessitate extensive hardening of the trails.

ALTERNATIVE 2: By providing additional parking, this project may increase the number of wilderness visitors, such as hikers and hunters, in this portion of the wilderness at certain times of the year. The presence of more visitors may slightly decrease opportunities for solitude in the vicinity of Grubb Ridge trailhead.

Based on past trends and observations of illegal parking, providing additional parking space is expected to have very little affect on wilderness character and solitude. The expansion of the Grubb Ridge parking area does not create a new attraction that would attract more people. Use level trends and types of use are not expected to change.

Access to the center portions of the wilderness would not be changed or made less challenging since access points would still be at the same locations. With no accommodation for horse trailers with the proposed parking lot expansion, horse use of adjacent trails is not likely to increase so the cumulative effects of having to better accommodate horses on adjacent trails are not expected in the foreseeable future. Routine maintenance should be adequate to maintain firm tread on trails near the expanded parking lot at Grubb Ridge trailhead.

Those portions of the Charles C. Deam Wilderness that offer the best opportunities to experience solitude and challenge are backcountry areas off the main trail system. This alternative would not reduce the opportunities for a wilderness experience in those remote, interior portions of the wilderness. Additional parking places may reduce the amount of traffic on Tower Ridge Road, since fewer people would have to drive from trailhead to trailhead looking for a parking spot.

ALTERNATIVE 3: By providing additional parking, this project may increase the number of wilderness visitors, such as hikers and hunters, in this portion of the wilderness at certain times of the year. The presence of more visitors may slightly decrease opportunities for solitude in the vicinity of Grubb Ridge Trailhead.

Based on past trends of parking areas exceeding capacity and observations of illegal parking, providing additional parking space is expected little affect wilderness character and solitude. The expansion of the Grubb Ridge parking area does not create a new attraction that would attract more people. Types of use are not expected to change. Use level trends may go up slightly with increased parking.

Access to the center portions of the wilderness would not be changed or made less challenging since access points would still be at the same locations. With no accommodation for horse trailers with the proposed parking lot expansion, horse use of adjacent trails is not likely to increase so the cumulative effects of having to better accommodate horses on adjacent trails are not expected in the foreseeable future. Routine maintenance should be adequate to maintain firm tread on trails near the expanded parking lot at Grubb Ridge trailhead.

Those portions of the Charles C. Deam Wilderness that offer the best opportunities to experience solitude and challenge are backcountry areas off the main trail system. This alternative would not reduce the opportunities for a wilderness experience in those remote, interior portions of the wilderness.

Additional parking places may reduce the amount of traffic on Tower Ridge Road, since fewer people would have to drive from trailhead to trailhead looking for a parking spot.

#### **Soil Erosion and Sedimentation:**

ALTERNATIVE 1: Disturbance would not occur at this site.

ALTERNATIVE 2: The area proposed for parking expansion would take place on Tilsit silt loam. As described in **Table 5** these soils are prone to a perched water table during the rainy season. As shown by **Figure 2**, the parking lot would receive little use during this time period, since it is outside the peak recreation season. Parking lot design includes grading for drainage and hardening with limestone aggregate as necessary. This would prevent excessive wetness and provide a firm surface.

Effects on erosion and stream sedimentation from activities on less than 0.25 acres combined with low slope gradient on the ridge top and location well buffered from streams would be negligible.

ALTERNATIVE 3: The area of disturbance would be about twice that of Alternative 2. As described in alternative 2, measures would be applied to reduce excessive wetness.

#### **Car-Animal Collisions & Interior Forest Habitat:**

ALTERNATIVE 1: There would be no effect on car-animal collisions and interior forest habitat as a result of this alternative.

ALTERNATIVE 2: The expansion of the parking lot at the Grubb Ridge trailhead would not be expected to increase traffic along Tower Ridge Road, and may in fact reduce the number of vehicles driving around and searching for a parking place on busy weekends. It is unlikely that the number of car-animal collisions would increase as a result of the parking lot expansion, and it is implausible that such collisions would reduce the viability of any species in the wilderness.

The proposed parking area expansion is located along an existing road and is considered to be edge habitat not interior habitat. Therefore the proposed parking lot expansion will not affect interior forest habitat.

ALTERNATIVE 3: The effects of this alternative on car-animal collisions would be similar to those described for Alternative 2. Since a larger area would be cleared to accommodate more vehicles, this alternative poses slightly increased risk of effecting interior forest habitat over Alternative 2.

#### **Response to Purpose and Need for Action:**

Alternative 3 would best meet objectives for safe and legal parking to better meet current use levels for recreation and public access to cemeteries. Based on use data for 1999 and 2000, this alternative would meet current use levels 94 percent of the time. Reduction of traffic on Tower Ridge road from visitors looking for a parking space and reduction of illegal parking along the road would provide increased visitor safety and more opportunities for legal parking. Alternative 2 would meet current use levels 89 percent of the time, and Alternative 1 would be the least responsive to the purpose and need for action, meeting current use levels about 75 percent of the time.

## OVERALL CUMULATIVE EFFECTS

### Soil Erosion, Sedimentation, and Water Quality:

"Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Considering the above, the cumulative impacts on development of the proposed action, when combined with past, present, and reasonably foreseeable future actions, are small.

The area of consideration for cumulative effects includes the nine counties with National Forest System (NFS) land in Indiana: Brown, Crawford, Dubois, Jackson, Lawrence, Martin, Monroe, Orange, and Perry. These counties have 2,251,500 acres of land (Schmidt et al. 2000). We estimate that on average the land classification in the nine counties with NFS land is about 50 percent forested land, 30 percent cropland, 10 percent pasture and other farmland, eight percent urban, and one percent water. The landscape is mostly a checkerboard of open farmland and forested land with single-family residence development along the roads. Within the national forest boundary, there are larger blocks of forested land. Monroe County has 54 percent forested land (Schmidt et al. 2000, p. 46).

USDA Forest Service administers about 198,000 acres of NFS land in Indiana. Most of the NFS is forested, with about 1.5 percent developed with roads or campgrounds, and about three percent is in an open non-forest condition.

Present and anticipated USDA Forest Service activities to be considered in cumulative effects include firewood, house log and timber sales, site preparation, planting of new stands, and construction of roads, trails, camp sites, and watershed protection. Recent harvest in the last five years has disturbed about 1,000 acres of NFS land. About 800 acres of the harvests were 4 miles south of the CCDW in Lawrence County to salvage tornado blow down. USDA Forest Service utilizes mitigation measures to minimize the impacts of these activities. There would be no appreciable impacts to watersheds or to soil and water resources because of future Forest Service activities.

On private land, timber harvests, agricultural crop production, and livestock grazing continue to occur. We estimate that most private forestland owners harvest every 10 to 20 years. Therefore, in an average year, at least 22 percent of the landscape is disturbed (two percent is harvested and 20 percent

is cultivated). Some development of infrastructure occurs on private land. The majority of this development is adjacent to urban areas.

Past activities on NFS land include timber harvesting, site preparation, and planting trees. On private land, past practices include conversion of woodlands to agricultural crop production, livestock grazing, timber cutting, and abandonment of farm practices leading to brushy fields and woods. During establishment of the Hoosier National Forest, private landowners sold tracts to the USA. Past agricultural practices on many of these current NFS lands led to excessive erosion resulting in abandonment of farming practices. We revegetated these former private lands and they are no longer actively eroding. During revegetation, USA used mitigating measures to protect soil and water resources.

A National Forest Closure Order (No. 09-12-20 of April 2000) limited use by horses and bicycles to the designated trail system (U.S. Department of Agriculture, Forest Service 2000). This closure has greatly reduced adverse impacts to soil and water resources. Non-designated, user-created trails had proliferated in years before the closure, and many of these trails were muddy, eroding excessively, and contributing sediment to local streams.

In all alternatives, the use of mitigation measures would result in minimal effects on soil and water. These effects, when added to the effects of past and current practices on public and private lands and the anticipated effects of future activities, would result in no adverse cumulative effects to soil and water resources.

### Recreation

In Indiana, only four percent of the landbase is in public ownership creating a highly competitive situation for outdoor recreation (Indiana Department of Natural Resources 2000). The Charles C. Deam Wilderness is located in one of the largest blocks of public land in Indiana for recreational use with Monroe Lake, Brown County State Park, and Yellowwood State Forest to the North. Use is heavy on adjacent tracts on NFS land, there are lots of nearby attractions, and Monroe County is growing as a community. In addition, hunting and fishing is popular on nearby public lands.

Individuals and society benefit from recreation in many ways: better health, less crime, employee productivity, and economic gain, just to name a few (Indiana Department of Natural Resources, Division of Outdoor Recreation, 2000). A cumulative effect on

this issue would be to contribute to these benefits to society, particularly to south-central Indiana.

The nearest recreation facility is Brown County State Park, which is managed by the Indiana Department of Natural Resources. That facility offers a 62.5 - mile trail system with 8 hiking trails totaling 9.8 miles and 24 horse trails totaling 52.7 miles of trail (Indiana Trails Inventory Summary Report, 1/12/2001).

The effects discussed above are minor when considered within the context of the entire state and the Forest. In addition, we expect no new recreation developments or changes in use patterns near the project area. Based on past and current recreation practices on public and private lands and the anticipated effects of future recreation activities, the alternatives would create no adverse cumulative effects regarding trail use concerns.

**Proposed Parking Lot Expansion**

The Council on Environmental Quality regulations defines cumulative impact as follows: "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). There are no known plans for additional road, road upgrades, or construction of attractions by other public or private entities near the proposed trail project area that may affect traffic. The cumulative impact on the environment of the incremental impact of constructing a parking lot to accommodate 10 to 15 vehicles when added to other past, present, and reasonably foreseeable future actions is very small.

The effects discussed above are minor when considered within the context of the entire state and the Forest. Also, no new recreation developments or changes in use patterns are expected within near the project area. Based on past and current recreation practices on public and private lands and the anticipated effects of future recreation activities, none of the alternatives would create no adverse cumulative effects regarding trail benefits.

**Heritage Resources**

As long as the mitigation measures are employed, the proposed project would have no effect (or cumulative effect) on significant or potentially significant archaeological sites. No known historic properties listed in or eligible for inclusion in the

National Register of Historic Places would be affected by the project.

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**NOTE:** *References cited in Appendices are found with each Appendix.*

# Appendices

# APPENDIX A – Public Comments from Initial Scoping

\*\* Please note: The following comments and responses were a result of the May 14, 1999 scoping letter. These comments and responses were originally included in the October 14, 1999 and January 12, 2000 Environmental Assessments. If this June 2001 Environmental Assessment has caused an original response to be incorrect, an additional response has been added in bold.

On May 14, 1999, a scoping letter describing the proposed wilderness trail relocation project was sent to 1,173 interested and affected groups and individuals requesting their comments on the proposed project. Twelve people responded to scoping with a phone call or letter. Three of the letters were virtually identical.

The following list identifies those who responded during the scoping process.

NAME	Response #
Anderson, Francis	7
Brown, Denzil – Shirley Creek Trail Riders	9
Frey, Libby	10
Hazlewood, Larry	3
Mittenthal, Suzanne – Hoosier Hikers Council	5
Revalee, Shaaron J.	2
Rollins, Yvette Anderson – Hoosier Horsemen	1*
Royer, Cheryl M.	8
Tomlinson, Susan	4
Whitlow, Maggie	1*
Winslow, Donald	6
Young, John A.	1*
* Letters contained virtually identical comments; treated as one for the purposes of analysis.	

Each response received during the scoping process was examined to identify specific comments, issues, and concerns. These comments were identified and sorted by issue. There is also a category for general comments, suggestions, and questions.

The comments are presented here in the respondent's own words. Following each comment is a statement that responds to the comment. Direct quotes appear in quotation marks and paraphrased comments do not have quotation marks.

The source of the comment is indicated by the response number shown in parentheses at the end of the comment. Where several response numbers are listed, the first number identifies the letter being quoted and the others refer to letters that echoed the same sentiment.

## General Comments, Suggested Alternatives, Questions

### G-1. General Comments

**Comment:** "I want to make it clear that I consider the available riding areas very important. We have a wonderful resource in southern Indiana that none of us want to risk losing" (1).

**Comment:** "What a wondrous treasure Hoosier National Forest is! I continue to marvel at how fortunate we are to have this area in our state" (4).

### G-2. General Support

**Comment:** "I concur with the relocating of trail segments A-D to avoid seasonally wet areas" (3, 6, 9).

**Comment:** No problem with relocation of trail segments A and D, and the parking lot expansion at Grubb Ridge (1, 8).

**Comment:** "I support your proposal of relocating trail C. This is a mess in the spring, and my first ride there several years ago was almost my last due to flooding and storm damage" (4).

**Comment:** Not familiar with trail segments A, B, and D, "but as long as they are trail relocations and not closures, I have no comment except that I trust your judgment" (4).

**Response:** *This project would involve relocation of four wilderness trail segments (A-D) to protect soil and water resources and to allow use of the trails without unacceptable impacts to the trails or other forest resources, including the wilderness.*

### G-3. General Opposition

**Comment:** "I have opposed horse trail(s) in the Deam Wilderness since the area was designated wilderness" (10).

**Response:** The Forest Plan lists horseback riding an appropriate activity within the Charles C. Deam Wilderness (USDA Forest Service 1991c, p. 2-37).

#### **G-4. Suggested Alternatives**

**Comment:** Consider as an alternative "the phasing out of the horse trails" in the wilderness (10).

**Comment:** Consider as an alternative the removal of Tower Ridge Road. "Wilderness areas should not contain roads" (6).

**Response:** The decision to be made is whether or not to relocate four wilderness trail segments and to expand the parking facility at Grubb Ridge trailhead. The suggested alternatives are outside the scope of the decision to be made. Forest Plan guidance for recreation use in the wilderness states that "opportunities exist for primitive type recreational activities such as hiking, backpack camping, horseback riding, hunting, fishing, and nature study" (USDA Forest Service 1991c, p. 2-37). Forest Plan guidance for the transportation system states that "adjacent to the wilderness, Tower Ridge Road and Hunter Creek Road will remain open" (USDA Forest Service 1991c, p. 2-38). Many people become confused as to why a road and motorized travel are permitted through the wilderness. The administration recommended two separate wildernesses be established outside the road corridor to avoid having one wilderness separated into two units by a transportation corridor. However, Congress designated the Charles C. Deam Wilderness in two units separated by the Tower Ridge Road. This road will remain open to the public with the wilderness units on either side. In order to allow maintenance of the road Congress set the wilderness boundary back 100 feet north and south of the centerline of the road.

**Comment:** "At one time there was a very good trail" to a cave in the area. "I know that we would all appreciate having access to that trail again....I don't understand why that trail was closed and would like to take up dialogue with someone about opening it back up" (1).

**Response:** The suggested trail is outside the scope of the decision to be made. The Forest Plan provides the following guidance for the management of caves on the Hoosier National Forest (USDA Forest Service 1991c, p. 2-11):

- "All caves will be managed as significant."
- "Recreational use of caves on the Forest will neither be encouraged nor discouraged."

- "No caves are singled out as well known caves for general public use unless adequate
- protection measures are developed to control and manage this use and it can be clearly
- established that no substantial risk, harm, or vandalism of the cave will occur."

Therefore, the designation of a trail to the cave would not comply with Forest Plan guidance.

**Comment:** Would like a shorter loop on the south side of Tower Ridge Road (7).

**Response:** This suggestion is outside the scope of the proposal, since none of the proposed trail segments currently being considered would create a shorter loop trail within the wilderness.

**Comment:** Wants a trail to Maxine's (7).

**Response:** This proposal is outside the scope of the decision to be made, since none of the trail segments being considered in this project would extend outside the wilderness.

**Comment:** "Additional small sections [of the Sycamore loop] could be located so as to place even more of the trail to the side of the bottom lands" (5).

**Response:** Although additional reroutes may be considered in the future, the proposed project only involves the relocation of trail segment A on the Sycamore loop.

**Comment:** Alternate route for trail segment C. "There is a small trail that traverses the base of Frog Pond Ridge much of the way around the tip. This is above flood water; it should be investigated and incorporated in a revision" (5).

**Response:** The suggested trail segment would be above the bottomland, but the stream crossing on the northeast side of Frog Pond Ridge would still be in a flood-prone stretch of Saddle Creek. Furthermore, a trail on the lower slopes of Frog Pond Ridge would cross numerous small side drains and intermittent streams. It would be difficult to construct a horse trail in this location that would meet Forest Service standards to protect soil and water resources. Such a trail would also be difficult to maintain. The proposed trail segment C is higher on the slope to avoid these small drainages, and crosses Saddle Creek further upstream, where there would be less danger of flooding during high water.

**Comment:** "Other measures, such as restricted horse use during wet seasons should be considered to minimize trail damage" (3).

**Response:** Seasonal closure of certain trails during wet weather was evaluated as an alternative not considered in detail. The ID team concluded that seasonal trail closures were not a viable alternative to the proposed action (see the alternatives section of this document). **Please refer to alternatives section on Page 6 of October 14, 1999 Environmental Assessment.**

## G-5. Questions

**Comment:** "Are the existing trails going to remain open until the relocation of trail segments is completed?" (1)

**Response:** Yes.

**Comment:** "Which 'user created trails' are to be closed? Where are they located?" (4).

**Comment:** "Which overused campsites are to be closed?" (4).

**Response:** These activities were listed in the scoping letter to give people an idea of the other types of activities that are likely to occur within the project area. They are on-going management activities that occur within the wilderness when erosion problems and illegal or inappropriate uses are discovered. No specific campsites or user trails are identified for closure as part of this project.

**Comment:** "What types of waterbars will be installed? The rubber ones seem to not be so effective in some places" because people just go around them, especially bike riders.

**Response:** Waterbars referred to in the scoping letter are low mounds of native soil with a shallow channel generally perpendicular to the trail to drain water off the tread. We describe these as cross drains or rolling dips in this EA.

## Social Concerns

### S-1. Favorite Places (Issue 1)

**Comment:** "The Saddle Creek crossing has been a favorite resting and watering spot for many years" (1,8).

**Response:** This issue was addressed by considering the no-action alternative, which would not involve any trail relocation. Riders could continue to use the Saddle Creek crossing for

resting, watering horses, and viewing wildflowers. The proposed action involves closure of the Saddle Creek crossing and the creation of two new crossings further upstream on the forks of Saddle Creek. **This issue is now addressed in the No Action Alternative and Alternative 2. The No Action Alternative would not involve any trail relocation. Riders could continue to use the Saddle Creek crossing for resting, watering horses, and viewing wildflowers. Alternative 2 would only close the existing crossing at Saddle Creek when the area is flooded. Riders could continue to use the Saddle Creek crossing for resting, watering horses, and viewing wildflowers when water levels are below 545 feet.**

**Comment:** Trail Segment C "has many beautiful wildflowers on along it. To see those wildflowers is the main reason I rode out of Blackwell on that trail in May" (2).

**Comment:** Trail Segment B "is not only very pretty but also has the water available for our horses, and I don't remember seeing any evidence of bad trail along there" (2).

**Comment:** "The change in the trail at "B" would not be a good one because...you have access to water there and if relocated there is no other water available for the horses for miles" (8).

**Response:** Trail segments B and C would also provide opportunities to view wildflowers, and the new stream crossings at Axsom Branch and Saddle Creek would have water for the horses. These crossings would be less subject to flooding than the existing crossings.

**Comment:** "The proposed move of the trail from the Saddle Creek crossing is troublesome, and frankly doesn't quite make sense.... I have ridden that area for years and know of only once that the trail has been closed due to wet weather" (1).

**Comment:** "The proposed move of the trail from the Saddle Creek crossing is not a change I feel is necessary. I have ridden the area for years and have known it to be flooded on occasion. The water recedes quickly and I see no reason to relocate the trail" (8).

**Response:** As discussed in the environmental effects section of this document, Saddle Creek crossing is subject to frequent flooding. Data from the U.S. Army Corps of Engineers indicates that the water level of Monroe Lake has exceeded 545 feet (the approximate elevation of the Saddle Creek crossing) in ten of the past 15 years. The water level remained above 545 feet for about two months

in 1996 and again in 1998.

**Comment:** "The proposed move, from what I can tell on the map, does not get the trail [near Saddle Creek crossing] out of wetness" (1).

**Response:** *The proposed action would relocate trail segment C above the 550-foot elevation. It would close the existing Saddle Creek crossing (at about 545 feet) and cross one the creek at about 555 feet and 560 feet in elevation. According to data from the U.S. Army Corps of Engineers, the new crossings would have flooded only once in the past 15 years.*

## S-2. Parking Lot Expansion (Issue 2)

**Comment:** "Will the expansion of parking facilities include room for horse trailers or not? I propose yes" (4).

**Comment:** The parking lot expansion "must not invite horse trailers" (5).

**Response:** *The proposed parking lot expansion at Grubb Ridge trailhead is not designed to accommodate horse trailers. At the present time there is no forest order prohibiting horse trailer parking at Grubb Ridge Trailhead. **If horse trailers become a problem at Grubb Ridge, a forest order prohibiting horse trailers at Grubb Ridge could be considered.***

**Comment:** "I concur with the enlargement of the parking area at the Grubb Ridge trailhead. At present there is parking in the Deam Wilderness for many more horse riders...than for hikers. This would provide more parking for hikers....This modification was in past plans and is long overdue" (3).

**Comment:** "The parking expansion sounds like a good idea - helpful for mushroom hunters, hikers, and hunters" (2).

**Comment:** "We are opposed to the expansion of the Grubb Ridge parking lot" (6).

**Response:** *Most of the scoping respondents were in favor of the proposed parking lot expansion, but some opposed the idea. Some people wanted parking for horse trailers and others did not. At present there is no forest order prohibiting horse trailers at Grubb Ridge Trailhead. However, the proposed project involves expansion of the parking lot at Grubb Ridge to accommodate 10 to 15 additional vehicles. **If horse trailers become a problem at Grubb Ridge, a forest order prohibiting horse trailers at Grubb Ridge could be considered.***

## S-3. Wilderness Character and Values (Issue 3)

**Comment:** "The first goal of the wilderness in the Forest Plan is to 'offer a degree of solitude and challenge.' By building a larger parking lot, the Forest Service is doing neither" (6).

**Response:** *The Forest Plan restricts the number of wilderness access points to five trailheads. The proposed project would not increase the number of access points, but it would allow more people to park at the Grubb Ridge trailhead. The best opportunities to experience solitude and challenge are in the remote, interior portions of the wilderness, and the proposed project would not affect those areas.*

**Comment:** Parking lot expansion "will increase access to the wilderness, thereby increasing access and the number of users, and decreasing solitude" (6).

**Comment:** "The area around Grubb Ridge is large enough to handle additional hikers" (3).

**Response:** *As discussed in the environmental effects section of this document, expansion of the parking lot could increase the number of visitors on trails near the Grubb Ridge trailhead. Some visitors would not mind encountering more hikers on the trail, but for others, more encounters would reduce opportunities for solitude.*

**Comment:** "The increase in parking will increase the number of cars driving on Tower Ridge Road. This will further decrease the amount of solitude one can experience in the wilderness" (6).

**Response:** *Expansion of the parking facility at Grubb Ridge is not expected to draw additional visitors to the Charles C. Deam Wilderness. Traffic on Tower Ridge Road is expected to remain about the same or decrease somewhat, since fewer visitors will have to drive from trailhead to trailhead in search of a parking space on busy weekends.*

**Comment:** Expansion of the parking lot at Grubb Ridge trailhead "will also continue to make the access to the center portions of the wilderness less challenging than if the only access was the edge (not the center)" (6).

**Response:** *The center portion of the wilderness is already easily accessible from the existing Grubb Ridge and Tower trailheads along Tower Ridge*

*Road. The project would not increase access to the central portion of the wilderness. Opportunities for physical and mental challenge remain within the interior portions of the wilderness.*

**Comment:** Allowing horse trailers to park in the new parking lot across from the Grubb Ridge trailhead would increase horse use and could destroy the narrow trail between the Grubb Ridge and Tower trailheads. "Replacing it with properly graded, horse-body width horse trail graveled half the way would require an expensive investment and further deteriorate the wilderness character of the trail" (5).

**Response:** *The existing and proposed parking facilities at Grubb Ridge trailhead are not designed to accommodate horse trailers. At present, however, there is no forest order prohibiting horse trailers from the Grubb Ridge Trailhead. The proposed parking lot expansion is not expected to increase horse use in this area. We do not anticipate such extensive hardening would be necessary to maintain this trail.*

**Comment:** "Monroe Lake is not a natural resource in the first place...There were many man made homesteads and roads for 200 years already in the area we now call wilderness."

**Response:** *Since Congress designated it as a wilderness, we have managed this area to promote its wilderness character and values.*

## Resource Effects

### R-1. Soil Erosion and Trail Maintenance (Issue 4)

**Comment:** "Many of the trails are presently being damaged by horse use and are not being repaired. In many cases this constitutes erosion. Federal mandates require that erosion on all federal lands be minimized.... Trails should be repaired when damaged" (3).

**Response:** *We agree that soil erosion due to recreational use of trails should be minimized, and that any damage to trails should be repaired as soon as practical. This project is being undertaken to relocate trails to more suitable locations to maintain a firm trail tread and to protect soil and water resources.*

**Comment:** "It appears that the new trail [segment C] skirts Frog Pond Ridge which has been an area of concern in the past" (1).

**Comment:** Trail segment C "places horse trails

back up on the unstable, loose, spring-laden, graben limestone rock/soil cover of Frog Pond Ridge which deteriorated so badly that all trails on it were closed by the Citizens LAC commission in 1992. This is unacceptable" (5).

**Response:** *The Citizens LAC Task Force recommended closure of the trails on Frog Pond Ridge due to severe erosion that was occurring, and the USDA Forest Service subsequently closed these trails. Unlike the eroding, user-created trails that were closed during the LAC process, the proposed trail segment C would be constructed in accordance with USDA Forest Service standards for resource protection, grade, switchbacks, and cross drains to divert water from the trail tread. These mitigation measures will reduce the severe erosion hazard associated with the soil types on Frog Pond Ridge.*

**Comment:** "The trail between the present Grubb Ridge and Tower trailheads is narrow and is being damaged by [little to moderate] horse use...[as evidenced by] the holes being punched in the outer edge of the trail near Grubb Ridge" (5). Additional use encouraged by providing horses with another short loop could totally destroy this trailbed" (5).

**Response:** *As discussed previously, the proposed parking lot expansion is not expected to substantially increase horse use. Routine maintenance of the narrow trail between the two trailheads should be adequate to maintain a firm trail tread.*

**Comment:** "The further from [Bass Pond] that horses are made to go, the better" (5).

**Response:** *It is possible that the shoreline of Bass Pond and its water quality could be damaged by many horses entering the pond to drink and cool off. However, there are few other water sources available for horses on this ridgetop. Therefore, the proposed project will include the hardening of an access point at the edge of the pond to protect it from horse impacts while allowing horses to drink from the pond.*

**Comment:** The appearance of Saddle Creek crossing "has changed over the years, but not due to horse traffic. The natural rise and fall of the water from the lake and heavy rains have changed the appearance of the crossing as it does everywhere" (1).

**Response:** *Heavy rains and the rise and fall of the lake have the power to move large rocks, to wash large chunks of soil from a streambank, and to redistribute stream sediments. Trails expose bare soil to the erosive force of moving water. Stream approaches and crossings are especially vulnerable*

to accelerated erosion and stream sedimentation.

**Comment:** "I am always amused by the discussion of erosion and damage horses do to the environment, when nature can come along and in seconds do more damage than thousands of horses could do in hundreds of years" (1).

**Response:** *Natural forces can indeed do great damage. Our primary responsibility as land managers is to promote healthy ecosystems, including healthy watersheds, for the benefit of the American people. We strive to permit appropriate use and enjoyment of the public lands under our care, while protecting the land and its resources.*

the trail relocations] that should not be damaged in any way" (3)

**Response:** *The old house is less than 50 years old, so it is not yet considered a heritage resource. However, it is not visible from the existing trail and the proposed project would move the trail even further from the house site. Heritage resource surveys were conducted in the project area, and no potentially significant sites were found. Therefore, the proposed project would not impact heritage resources.*

## **R-2. Wildlife and Interior Forest Habitat (Issue 5)**

**Comment:** "The increase in parking will increase the number of cars driving on Tower Ridge Road.... The increased traffic will also likely have a negative effect on wildlife. The number of car-animal collisions will increase, and may affect species' ability to live and survive in the wilderness" (6).

**Response:** *As discussed in the environmental effects section, the parking lot expansion would not be expected to increase traffic along Tower Ridge Road or the number of car-animal collisions. It is extremely unlikely that collisions could reduce the viability of any species in the wilderness.*

**Comment:** "The expansion of the parking lot will have an adverse effect on certain species of animals that require interior forest. It will increase the amount of edge, and therefore increase the amount of predation and brood parasitism on breeding birds. The cerulean warbler, scarlet tanager, ovenbird, red-eyed vireo, and other species of neotropical migrant songbirds will be especially adversely affected" (6).

**Response:** *As discussed in the environmental effects section, the parking lot expansion would not affect forest interior habitat or the species that depend upon it. The area to be cleared for the new parking lot does not provide forest interior habitat at present, since it is an old homestead that is vegetated with scattered trees, saplings, vines, and shrubs, located along a road corridor and adjacent to the existing parking lot.*

## **R-3. Historic and Archaeological Resources (Issue 6)**

**Comment:** "The relocation should not be allowed to affect historic or archaeological sites. I am aware of a shell of a house [in the general vicinity of one of

# APPENDIX B – *Effects of the Wilderness Trails Relocation Project on Management Indicator Species*

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## INTRODUCTION

The USDA Forest Service is mandated under Code of Federal Regulations (CFR) 200.3(b)(2) "to administer and manage lands . . . in accordance with . . . the National Forest Management Act (NFMA)". The NFMA does not mention Management Indicator Species (MIS) or monitoring wildlife populations. Direction for MIS is located in 36 CFR 219.19, which establishes the basis for managing and maintaining viable populations of existing native and desired non-native vertebrate species. It states that for planning purposes a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. Specifically, 36 CFR 219.19(a)(6) states "population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies to the extent practicable."

The USDA Forest Service Manual (FSM) provides further direction on MIS both in the Wildlife, Fish, and Sensitive Plant Habitat Management directives (U.S. Department of Agriculture, Forest Service 1991b) and the Planning Directives (U.S. Department of Agriculture, Forest Service 1991b). MIS are defined as "plant and animal species, communities, or special habitats selected for emphasis in planning in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (U.S. Department of Agriculture, Forest Service 1991b, 2620.5). The FSM further states that species selected will be those that "best represent the issues, concerns, and opportunities to support the recovery of Federally-listed species, provide continued viability of sensitive species, and enhance management of wildlife and fish for commercial, recreational, scientific, subsistence, or aesthetic values or uses" (U.S. Department of Agriculture, Forest Service 1991b, 2621.1).

The Hoosier National Forest Land and Resource Management Plan (U.S. Department of Agriculture, Forest Service 1991c) integrates MIS into the planning process consistent with USDA Forest

Service Manual direction under Resource Integration Requirements (U.S. Department of Agriculture, Forest Service 1991a, 1922.15 items 10 and 11). The FSM states "10. Ensure that the set of management indicator species includes RPA and regional wildlife and fish indicators and represents all significant forest level wildlife and fish diversity and resource production issues, concerns, and opportunities." and "11. Ensure that management prescriptions will provide for the habitat capability to meet demand for management indicator species and provide access for recreational and commercial uses with minimal disturbance to species use of suitable habitats".

The manual further requires that plans "Ensure that the plan provides for the kinds, amounts, and distribution of habitat needed for the recovery of threatened and endangered species and needed to maintain viable, well-distributed populations of all existing native and desired non-native species" (U.S. Department of Agriculture, Forest Service 1991b, 1922.15(13)).

The Forest Plan forest-wide guidance for managing vegetation to provide diverse ecosystems states that "habitat objectives and capability for management indicator species will be considered in forest management as appropriate. MIS are monitored on National Forest land to determine population trends and to evaluate effects of management activities on selected species" (U.S. Department of Agriculture, Forest Service 1991c, pp. 2-6, 5-5).

Analysis of project level effects is used to determine an activity's contribution to meeting forest-wide objectives for providing for well distributed, viable populations. Management activity effects are examined in light of the existing habitat conditions, both within and outside the Forest, and documented population conditions or trends.

## Species Effects

**Wood duck (*Aix sponsa*)** - This duck favors bodies of water with overhanging trees or brush and downed logs. It is often found in wetlands and marshes but will use any body of water. The wood duck nests in cavities in hardwood trees, which are not necessarily close to water, but are usually in

bottomland areas. Breeding begins in early March. Ponds or perennial streams under forest canopy are required after eggs hatch, however. Acorns and grains provide most of the food for this species, but insects are frequently taken by young birds. Monitoring of wood duck production for Indiana indicates generally increasing populations with annual variability. Nesting success for this species was higher in Indiana than for the Mississippi Flyway as a whole (Hartman 1997, 1998a, 1998b). There is suitable habitat for this species along Axsom Branch, Saddle and Sycamore Creeks. This project would help improve habitat for this species by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. There would be no change in the effects to this species if the no action alternative was selected.

**American woodcock** (*Scolopax minor*) - This bird nests in wet meadows and thickets but uses dry, upland, old-field habitats for courtship. Earthworms are their preferred food, although other invertebrates are also eaten. The 11-year trend for this species is downward about five percent (Lehman 1998a). There is suitable habitat for this species within the project area in the vicinity of Axsom Branch, Saddle and Sycamore Creeks. This project would improve habitat for this species by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. There would be no change in the effects to this species if the no action alternative was selected.

**Wild turkey** (*Meleagris gallopavo*) - This species uses both heavily wooded areas and openings. It typically nests in upland hardwood forests, although pine plantations are occasionally used. They begin nesting in early April. Grains of grasses, acorns, and other plant material form most of their food, but many invertebrates are also taken. Open land is also required for foraging for insects. Population trends for turkeys show continuing increases in Indiana (Bucks 1998a). There is suitable habitat for the wild turkey within the planning area. This project would only impact a small proportion of the habitat; the majority would still be intact and available for this species. This project should, therefore, have no effect on this species. Likewise, the no action alternative would have no effect on this species.

**Ruffed grouse** (*Bonasa umbellus*) - This species is found in woods, woods borders, brushy areas, dense young forest, or openings. It breeds during April and May. These birds feed largely on insects during the summer, but fruits and other plant material is consumed throughout the year. The population trend for this species indicates significant declines since a peak in the 1970's. (Bucks 1998b

and 1998c). There is some suitable habitat for this species within the project area. This project would only impact a small proportion of the habitat; the majority would still be intact and available for this species. Neither the proposed project or the no action alternative would have an effect on this species.

**Broad-winged hawk** (*Buteo platypterus*) - These hawks tend to nest in extensive woodlands or larger woodlots. It typically requires a large foraging area which includes forest, edges, and openland. This species takes primarily small mammals, reptiles, and insects as food. Populations of this bird have not shown significant changes since 1966 (Castrale et al. 1998). There is suitable habitat for this species within the planning area, and numerous observations have been recorded both within and adjacent to the project area. Broad-winged hawks have been recorded within one-half mile of the parking lot expansion at Grubb Ridge (Project E) and within one mile of the proposed trail relocation at Cope Hollow (Project D). In addition, there is potential habitat for this species in the mesic forest and the moist bottoms along Axsom Branch, Saddle, and Sycamore Creeks. Since, few if any, overstory trees will be removed for the trail relocation project and only a limited number of white pine will be removed for the parking lot expansion, this project would only impact a small proportion of the suitable habitat. The areas where tree removal did occur, could provide suitable foraging habitat for the species. As a result, this project should have no effect on the broad-winged hawk. The no action alternative would not result in the removal of overstory trees, so there would be no effect.

**Pileated woodpecker** (*Dryocopus pileatus*) - This bird uses deep woods, woodlots, residential areas, and narrow bands of woods along stream courses. It is a cavity nesting species which requires large snags, and large woody debris on the forest floor. Nesting begins in early May. Insects and larvae provide most of this birds food. It is unlikely that suitable habitat is limiting populations of this species on the Forest, however the species is largely restricted to landscapes with high forest cover. Populations have shown a significant annual increase since 1966 (Castrale et al. 1998). The existing and proposed trails pass through areas that provide suitable habitat for this species. In both cases, the majority of the suitable habitat for this species would remain intact. Therefore, neither the proposed action or the no action alternatives should have an effect on this species.

**Acadian flycatcher** (*Empidonax vireescens*) - This bird is found in heavily wooded areas with developed understories and on wooded

streambanks within floodplains. This bird requires snags in the understory from which it forages for insects. Nests are located on slender branches of trees and shrubs, usually 10 to 20 feet above the ground. Nesting usually occurs during June. This bird eats insects taken primarily while in flight. Population trends for this species have not shown significant changes since 1966 (Castrale et al. 1998). There is suitable habitat for this species within the planning area including along Axsom Branch, Saddle and Sycamore Creeks. Both the existing and proposed trails pass through areas that provide suitable habitat for this species. In both cases, the majority of the suitable habitat for this species would remain intact. Therefore, neither the proposed action or the no action alternatives should have an effect on this species.

**Scarlet tanager** (*Piranga olivacea*) - This tanager nests in large, dry, upland forests and utilizes clearings and forest edges for foraging (Mumford and Keller 1984). Nests are found on horizontal branches often above openings during June. Insects and larvae provide most of this species food. These are gleaned from leaves and twigs. This species has showed a significant annual increase in population since 1966 (Castrale et al. 1998). There is suitable habitat for this species within the planning area, only a small percentage of which will be impacted by the proposed action or is currently impacted by the existing trails. This project should, therefore, have no effect on this species.

**Louisiana waterthrush** (*Serriurus motacilla*) - This bird lives along small, usually perennial, woodland streams and is seldom found far from water. Nests are usually found in root tangles along stream banks from early May through mid June. This bird eats insects and other invertebrates taken from the edges of streams. This species populations have increased significantly since 1966 (Castrale et al. 1998). This project would help improve habitat for this species by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. There would be no change in the effects to this species if the no action alternative was selected.

**Wood thrush** (*Hilocichla mustelina*) - This bird prefers woodlands and will nest near clearings or buildings in wooded areas (Mumford and Keller 1984). It nests in deciduous forest understory trees about ten feet above the ground during June. It is found in both open and closed canopy forests. This species feeds on insects, and fruits and berries. Population trends indicate a significant decline in this species statewide since 1966. They are much more abundant in south-central Indiana landscapes dominated by forest, including the Hoosier National

Forest (Castrale et al. 1998). There is suitable habitat for this species within the planning area that both the existing and proposed trails pass through. This species was heard several times on the site visits to the area. Since, few if any, deciduous overstory trees will be removed for the trail relocation project and only a limited number of white pine will be removed for the parking lot expansion, this project would only impact a small proportion of the suitable habitat. As a result, this project should have no effect on the wood thrush. The no action alternative would not result in the removal of overstory trees, so there would be no effect.

**Black-and-white warbler** (*Mniotilta varia*) - This bird nests in both secondary and mature forests. It nests at the base of large trees among dense ground vegetation in May and early June. Insects and larvae provide most this species food. These are taken from the trunk and lower branches of large trees. While this species has been detected during Breeding Bird Surveys there is no reported significant population trend information (Castrale et al. 1998). The state Heritage Database lists numerous records of this species throughout the planning area. During site visits two individuals were also heard. Both the existing and proposed trail locations pass through suitable habitat. Since, few if any, overstory trees will be removed for the trail relocation project and only a limited number of white pine will be removed for the parking lot expansion, this project would only impact a small proportion of the suitable habitat. As a result, this project should have no effect on the species. The no action alternative would not result in the removal of overstory trees, so there would be no effect.

**Worm-eating warbler** (*Helminthos vermivorus*) - This warbler prefers dense woodlands with down timber or dense understory vegetation. Nests are near or on the ground in late May and early June. Insects and larvae provide most of this species food, and are taken mostly from the ground. Survey information has not shown a significant population trend for this species (Castrale et al. 1998). There are numerous sightings of this species both within and adjacent to the project area, and both the existing and proposed trail locations pass through suitable habitat. Both the proposed project and the no action alternative impact a small proportion of the suitable habitat. As a result, neither alternative should have an effect on the species.

**Prairie warbler** (*Dendroica discolor*) - This bird nests in overgrown, old-field habitats. It is found in somewhat open brushy areas with many shrubs and saplings. Nests average about seven to eight feet above the ground in shrubs and small trees. Breeding takes place from May to July. Insects and

larvae provide most of this species food. Significant changes in populations have not been detected since 1966. The greatest concentrations of this species are in southern Indiana, including the Hoosier National Forest (Castrale et al. 1998). There is limited habitat for this species within the planning area, the majority of which is located along the stream corridors. This project would help improve habitat for this species by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. There would be no change in the effects to this species if the no action alternative was selected.

**Pine warbler** (*Dendroica pinus*) - This warbler prefers to nest in pine plantations, usually of shortleaf, more rarely in white pine. Most nests are well above the ground from May to July. Insects and larvae provide most of this species food. While this species has been detected during Breeding Bird Surveys there is no reported significant population trend information (Castrale et al. 1998). There is suitable some habitat for this species within the planning area. Since, few if any, conifer overstory trees will be removed for the trail relocation project and only a limited number of white pine will be removed for the parking lot expansion, this project would only impact a small proportion of the suitable habitat. As a result, this project should have a minor negative effect on the pine warbler. The no action alternative would not result in the removal of any conifer trees, so there would be no effect.

**Yellow-breasted chat** (*Icteria virens*) - This bird prefers thickets, briar patches, and somewhat open grassy area with many shrubs and saplings. Nests are near the ground, frequently in blackberry brambles from May to July. Insects and larvae provide most of this species food. Population monitoring for this species indicates a significant annual decline since 1966 (Castrale et al. 1998). There is little, if any, suitable habitat for this species within the vicinity of the trail relocations and proposed parking area. As a result, neither the proposed action or the no action alternative would impact this species.

**Raccoon** (*Procyon lotor*) - This species is a habitat generalist although it prefers to forage near water. It uses most terrestrial habitats and generally needs streams or ponds. Raccoons travel along hedgerows and waterways. Dens are typically in large hollow trees. Young are born in April and May. Raccoons are omnivorous. Population indices for raccoons show increased populations since the 1970's with relative stability in recent years (Lehman 1998b). There is suitable habitat for the species within the planning area. Both the existing and proposed trails pass through suitable habitat. Since

a small proportion of the suitable will be impacted, neither the proposed action or the no action alternative will have any effect on this species.

**Bobcat** (*Felis rufus*) - Bobcats may be found in a variety of habitats including forests and open lands. They often forage along roads and openings. They are nocturnal predators. Dens are usually in crevices in rock. Young are born in late spring. Although populations remain low, numbers of this species are apparently increasing with sightings tripling since 1992 and increased incidence of roadkill (Lehman and Weaver 1998, IDNR 1999). Several bobcats have been observed within and adjacent to the project area. Observations have been recorded within one-half mile of Project B at Axsom Branch Creek, within one mile of Project D at Cope Hollow, and within one mile of Project E, the parking area at Grubb Ridge. Both the existing and proposed trails pass through suitable habitat for this species. Since only a small percentage of suitable habitat will be impacted by the no action alternative and proposed action, and since bobcats often use trails and old roads as travelways, there will be no effect on this species.

**Gray squirrel** (*Sciurus carolinensis*) - This species utilizes overmature or declining trees with hollows for den sites. It prefers mature deciduous forest, often with scattered brushy or open areas. This species may nest in cavities or build nests of twig and leaves in treetops. Litters of young are produced from February through October. It eats mostly plant material. Populations of this species are stable with some year to year fluctuation (Lehman and Weaver 1998). It is unlikely that habitat is limiting. Both the existing and proposed trail locations pass through suitable habitat. Since, few if any, overstory trees will be removed for the trail relocation project and only a limited number of white pine will be removed for the parking lot expansion, this project would only impact a small proportion of the suitable habitat. As a result, this project should have no effect on the species. The no action alternative would not result in the removal of overstory trees, so there would be no effect.

**Cliff plant associations** - These plant communities include a number of vascular and non-vascular plants which occur on sandstone cliffs. They may be moist or dry, or have species characteristic of both depending on their height and aspect. Monitoring of these associations on the Forest indicates they are healthy and have not been disturbed (U.S. Department of Agriculture Forest Service 1998). This project will not impact any cliffs. There will be no effect on cliff plant associations for either the action or no action alternatives.

**Barrens/glades** - Barrens and glades are grass dominated plant communities with some degree of tree canopy, typically dry site oaks. Glades have large amounts of exposed bedrock. Both communities are dominated by prairie herbs. Restoration efforts are improving the health and vigor of barrens and glades on the Forest. Monitoring indicates healthy and diverse vegetative conditions in these communities following treatments (Olson 1997). This project will not impact any barrens or glades. There will be no effect on barrens/glade communities for either the action or no action alternatives.

**Largemouth bass** (*Micropterus salmoides*) - The largemouth bass has been stocked in most ponds and lakes on the Hoosier National Forest, and can sometimes be found in deep pools or backwaters of medium to larger streams. Spawning occurs during May and June. It feeds on insects, crustaceans, and smaller fish. One of the main emphases of this project is to reduce the impacts to wetlands, streams, and ponds. Therefore, stream habitat and habitat for species such as the largemouth bass would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to largemouth bass habitat because trail and soil and water protection standards are difficult to maintain.

**Smallmouth bass** (*Micropterus dolomieu*) - The smallmouth is found in clear, gravel bottomed streams with relatively cool water. Spawning occurs during May and June. It feeds on insects, crustaceans, and smaller fish. Smallmouth bass are not present within the project area, therefore, neither the action or no action alternative will have an effect on the species.

**Rock bass** (*Ambloplites rupestris*) - The rock bass is found in clear, relatively cool water, in silt-free rocky streams. It has been introduced into some lakes and ponds by anglers. It feeds on insects and crustaceans. It tends to utilize vegetated and brushy stream margins and pools, and the rocky and vegetated margins of lakes. One of the main emphases of this project is to reduce the impacts to wetlands and streams. Therefore, stream habitat and habitat for species such as the rock bass would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where

impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to rock bass habitat because trail and soil and water protection standards are difficult to maintain.

**Bluegill** (*Lepomis macrochirus*) - This fish is stocked into most ponds and lakes on the Hoosier National Forest. It is found most often in clear ponds with fairly dense vegetation, but may occur in many other bodies of water. It feeds on insects and crustaceans. One of the main emphases of this project is to reduce the impacts to wetlands, streams, and ponds. Therefore, stream habitat and habitat for species such as the bluegill would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to bluegill habitat because trail and soil and water protection standards are difficult to maintain.

**Grass pickerel** (*Esox americanus*) - The pickerel is found in vegetated pools and slack waters in streams. Spawning occurs during March and April. It feeds on smaller fish. Grass pickerel are not present within the project area, therefore, neither the action or no action alternative will have an effect on the species.

**Pugnose minnow** (*Opsopoeodus emiliae*) - The pugnose minnow is found in vegetated pools and slack waters of streams. Spawning probably occurs in June. It feeds on small invertebrates. Pugnose minnow are not present within the project area, therefore, neither the action or no action alternative will have an effect on the species.

**Southern redbelly dace** (*Phoxinus erythrogaster*) - This species prefers small, clear, cool streams in ravines. Spawning occurs during May and June. They feed mostly on algae and creek sediments. One of the main emphases of this project is to reduce the impacts to wetlands and streams. Therefore, stream habitat and habitat for species such as the southern redbelly dace would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to southern redbelly dace habitat because trail and soil and water protection standards are difficult to maintain.

**Redfin shiner** (*Lythrurus umbratilis*) - This species is found in pools in smaller streams. Their food habits are essentially unknown. There are several streams within the planning area including Axsom Branch, Saddle and Sycamore Creeks. One of the main emphases of this project is to reduce the impacts to wetlands and streams. Therefore, stream habitat and habitat for species such as the redfin shiner would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to redfin shiner habitat because trail and soil and water protection standards are difficult to maintain.

**Stream invertebrates** - Stream invertebrates occur in ephemeral, intermittent, and perennial streams. Each stream type has its own characteristic group of species. This group of animals includes crayfish, mollusks, aquatic larval forms of insects, segmented worms, and others. There are several streams within the planning area including Axsom Branch, Saddle and Sycamore Creeks. One of the main emphases of this project is to reduce the impacts to wetlands and streams. Therefore, stream habitat and habitat for stream invertebrates would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of stream crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to stream invertebrates because trail and soil and water protection standards are difficult to maintain.

#### Monitoring of Fish and Stream Invertebrates

Monitoring of management indicator fish species and stream invertebrates is accomplished by Hoosier National Forest personnel, the Indiana Department of Natural Resources Division of Fish and Wildlife, and the Indiana Department of Environmental Management. Surveys of each water body are completed to develop species composition profiles and information is gathered on water quality and habitat characteristics. Productivity varies between bodies of water and segments of streams and rivers. Baseline information has been gathered which shows comparatively healthy and dynamic aquatic ecosystems on and around the Hoosier National Forest. Population trend data is not yet available. Survey information in the following documents is also incorporated by reference (Andrews 1986, 1991, 1992, and 1996; Andrews

and Pearson 1983; Ayers 1978; Ball 1973; Ball and Schoenung 1996; Burch 1987a, 1987b, 1987c, 1988a, 1988b, and 1988c; Burch and Glander 1987, 1988, and 1989; Carnahan 1993, 1995, and 1997; Carnahan and Stefanavage 1995; Clarke et al. 1998; Dufour 1999; Ewing 1989, 1993, and 1997; Flatt and James 1981; Glander 1984a, 1984b, 1984c, 1984d, 1985, 1986, 1987a, 1987b, 1988, 1989a, and 1989b; Gulish 1968; Hottell 1980; Jones and Pfister 1992; Keller 1971a and 1971b; Lehman 1989, 1990a, 1990b, 1990c, and 1996; Ridenour and Johnson 1974; Simon 1995; Stefanavage 1993a and 1993b; Thomas 1986; and Wenzel 1989a and 1989b).

#### Wetlands

Wetlands include ephemeral wetlands, marshes (herbaceous dominated permanent wetlands), and swamps (wetlands dominated by trees and or shrubs). Each type has distinct vegetation, soils, and hydrology. Acres of wetlands are recorded in Combined Data System (CDS) database. The number of acres of wetlands on the Forest has been increased through restoration projects and lake construction. There is wetland habitat along the streams and Cope Hollow. One of the main emphases of this project is to reduce the impacts to wetlands and streams. Therefore, wetland habitat would be improved by relocating the trails farther upslope from the riparian habitat and reducing the number of wet crossings. If the no action alternative is selected, the trail segments will continue to be maintained in the floodplain and riparian area where impacts to soil and water resources are occurring. Over the long-term, there would be a negative impact to wetlands because trail and soil and water protection standards are difficult to maintain.

**Cave invertebrates** - Cave invertebrates may be found in true caves and in deep rock shelters. Cave habitats can be affected by changes in airflow or hydrologic regimes. Monitoring of caves on the Forest has found an array of species existing in a system with no major environmental problems. Population trends have not been determined (Lewis 1994, Lewis 1998, Hobbs 1995, Liddle 1995). The nearest cave is approximately 1/2 mile from one of the proposed trail relocations. Neither the proposed action or the no action alternative will have any effect on cave invertebrates.

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## APPENDIX C – *Public Comments on the October 14, 1999 Environmental Assessment*

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\*\* Please note: The following comments and responses were a result of the October 14, 1999 Environmental Assessment. These comments and responses were originally included in the January 12, 2000 Environmental Assessment. If this June 2001 Environmental Assessment has caused an original response to be incorrect, an additional response has been added in bold.

A 30-day formal comment period followed release of the predecisional EA on October 14, 1999. Each response received on the EA was categorized to identify specific comments, issues, and concerns. Their comments are identified and presented here in the respondent's own words. Following each comment is a response.

Name	Response Number
Tim Weaver	01
Larry Hazlewood	02
Suzanne Mittenthal	03

### **Issue 1: Favorite Places for Resting, Viewing Wildflowers, Watering Horses**

Comment: "Bass Pond is probably my favorite spot in the Hoosier National Forest. Many family and friends memories for 20 seasons." 03

Response: Your comment is noted.

### **Issue 2: Parking for Hikers, Hunters, Cemetery Visitors, and Horse Riders**

Comment: "I am writing in support of your decision to add parking spaces to the Grubb Ridge parking area in the Deam Wilderness." 01

Comment: "I agree with the plan to provide additional parking for wilderness visitors at the Grubb Ridge area." 02

Response: Your comment is noted.

Comment: "I ask that horse trailers not be allowed to use these parking spaces. They have a large area at Blackwell Campground which totals more than the proposed Grubb Ridge and the Lookout Tower parking area." 02

Response: The parking lot will not be designed for vehicles with trailers, however, there is not forest order preventing horse trailers from using the area. At present there is little or no horse trailer parking at Grubb Ridge. The parking area will be monitored for horse trailer use and corrective action may be taken if trailers become a problem. ***If horse trailers become a problem at Grubb Ridge, a forest order prohibiting horse trailers at Grubb Ridge could be considered.***

Comment: "I agree with relocation trail segments A, B, and C. There must be continued maintenance on all trails to make sure that relocation of other segments is not necessary in a few years." 02

Response: Your comment is noted.

Comment: "I do not agree with the proposed relocation of segment D. Bass Pond is one of the largest ponds in the wilderness area. It is adjacent to the beautiful natural area of Cope Hollow. To allow horses to go between Bass Pond and Cope Hollow will damage this wonderful natural area. Horses already visit (illegally) the pine tree area adjacent to Bass Pond. To allow horses to go closer to the pond will unnecessarily invite more horse traffic to the pond. Horses tramping down the banks of the pond will allow more sediment to enter the pond and destroy forever its beauty and the pond life. The horses have just come from or are going to a creek area from which the horses can drink. It would be good for the horse riders to tie their horses to the east away from the pond and walk into the Bass Pond area, as do the hikers." 02

Comment: "To put the trail nearer Bass Pond, instead of on the far side of the meadow, is inexcusable. Your plan seems to suggest that you are considering putting the main loop trail very close to the pond, possibly considering putting it in the

pine forest near the pond, or on the steep slope right below the dam. In the past, horsemen have stabled horses in these pines, girdling the trees, and fouling the area for campers. This plan would totally destroy the natural character of the area for campers and fishermen. This proposed change violates almost every aspect of wilderness character that Forest Service is pledged to protect." 03

Response: Relocating the trail around Bass Pond will eliminate the wet and muddy condition found on the existing trail. Conditions at the pond should remain similar to existing conditions since horse riders are already using the area. The pine forest and pond are human made and as such are unnatural features in a wilderness landscape. Should damage occur on the pond bank, we will take steps to harden the area with native stone to prevent sediment from entering the water. Hitching posts may be installed to reduce damage to vegetation around the pond.

Comment: "You note that there are few other sources of water on this ridge top. However, horses are at this point only a few minutes from the end of the ridge, and will be going down to a stream. The present trail to the lake does not get a great deal of horse use, suggesting that it is not viewed as essential by many riders. In addition, the trail now passes very close to a small, less pristine pond on the trail descending into Dennis Murphy Hollow from the west. No need to relocate a horse trail right up to a new pond." 03

Response: Horse owners would prefer horses drink from running streams if available. Many of the streams are dry much of the year forcing horses to drink from ponds. Horse riders prefer clean water and easy access to avoid disease and injury to their animals. Bass Pond is attractive to horse riders for the same reason it is to hikers and fishermen that is why they use this pond instead of the other ones in the area.

#### **Issue 4: Soil Erosion and Trail Maintenance**

Comment: "This proposal places horse trails back up on the unstable, loose, spring-laden, graben limestone rock/soil cover of Frog Pond Ridge which deteriorated so badly that all trails on it were closed by the Citizens "LAC" commission in 1992. This is unacceptable." 03

Response: Trails will be constructed in accordance with Forest Service standards and maintained to standard thus avoiding unacceptable soil erosion. The flood free trail will eliminate user made trails on these same slopes when the existing trail is under water. It will also reduce the sediment into the

Monroe Lake watershed by eliminating the muddy conditions in the flood plain.

Comment: "You disclaim, however, any intention of controlling deterioration of this trail and others by carefully noting at the end of a review of effects on indicator species of (1) stream fish, (2) stream invertebrates, and (3) wetlands, that "Over the long-term, there would be a negative impact to (1)-(3) because trail and soil and water protection standards are difficult to maintain. Erosion on trails is possible to control with careful construction and annual maintenance of every mile of trail. The HNF's disclaimer attempts to excuse its failure to acknowledge that annual maintenance is essential as it does not have the budget to monitor and maintain the large number of horse trails in its present system. This trail location is an invitation to disaster." 03

Response: Trails will be constructed and maintained to standard but that does not mean there will be no impact, only that is within acceptable limits. Proper construction techniques and annual maintenance will provide adequate safeguards to protect the environment.

#### **Issue 5: Wildlife and Interior Forest Habitat**

No comments received.

#### **Issue 6: Historic and Archaeological Resources**

No comments received.

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