Chapter 7—Mitigation and Commitments

7.1 Introduction

Since the earliest phases of the Tier 1 study, efforts have been made to avoid impacts to human and natural resources. In particular, avoidance and the opportunity to minimize impacts were used in the decision-making process to identify a Tier 1 preferred alternative. After alternatives were identified, further efforts were undertaken to develop comprehensive mitigation measures. Environmental agencies and the public were instrumental in providing assistance to avoid and minimize impacts upon both the human and natural environment, and have helped develop many of the mitigation measures in this chapter.

This chapter is organized based upon the mitigation commitments made in Tier 1 for Preferred Alternative 3C. These commitments have been retained, and additional refinements are being made in each of the Tier 2 EISs. Section 7.2 discusses the major mitigation initiatives first presented in the Tier 1 EIS. These commitment initiatives have continued in Tier 2. Section 7.3 lists specific mitigation measures and commitments for each environmental resource category for Section 2. Section 7.4 provides mitigation costs for Section 2 and explains the methods used for estimating mitigation costs. From a mitigation standpoint, the Section 2 alternatives are very similar, and mitigation costs for each of the Section 2 alternatives are expected to be similar as well.

7.2 Major Mitigation Initiatives

Mitigation opportunities have been explored throughout the NEPA process. INDOT and FHWA have contacted state and federal environmental agencies, environmental organizations, and the public to provide input on both creative and traditional approaches for replacement of environmental resources that may be lost as a result of this project. Based on this consultation, INDOT and FHWA have developed a number of major mitigation initiatives, including several initiatives that go beyond the requirements of the law. These initiatives are summarized in Table 7-1. Initiatives that apply to Section 2 of the project are explained in greater detail in the text that follows the table.

Table 7-1: Major Initiatives

Major Initiatives	Description
Context Sensitive Solutions (CSS)/ Community Advisory Committees (CAC)	CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist Which has been implemented during the Tier 1 and Tier 2 EIS development and will continue through subsequent design.
Indiana Bat Hibernacula	INDOT and FHWA will attempt to purchase and protect hibernacula (winter habitat) for the Indiana bat.
Wetland Mitigation	INDOT and FHWA will replace wetlands impacted by the preferred alternative in accordance with INDOT's Wetlands MOU. Sites have been secured and mitigation construction is underway in some sections in advance of highway construction.
Forest Mitigation	INDOT and FHWA will mitigate upland forests impacted by the preferred alternative at a ratio of 3:1. Multiple sites have been secured for this mitigation effort.
I-69 Community Planning Program	INDOT and FHWA have developed a program that establishes a regional strategy for managing growth.
Geographic Information System (GIS)	INDOT and FHWA have developed and are maintaining a statewide GIS Atlas that is comprised of more than 170 different layers. This Atlas is available on the Indiana Map website.
Update County Historic Surveys	INDOT and FHWA will provide financial and technical assistance to IDNR to support the completion of field surveys and publication of County Interim Reports.
Biological Surveys on Wildlife and Plants	INDOT has worked with resource agencies to conduct biological surveys for threatened and endangered species. Follow-up surveys for the Indiana bat are also being made prior to and during construction. These Indiana bat surveys are being initiated prior to construction.
Bridging of Floodplains	INDOT and FHWA will bridge the Patoka River and Flat Creek floodplains. This bridging has been incorporated into the Section 2 alternatives.
Distance Learning	INDOT and FHWA will continue to support distance learning opportunities for students in Southwest Indiana as part of the public outreach for transportation projects.

Context Sensitive Solutions (CSS) / Community Advisory Committees (CAC)—Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. INDOT has adopted the following policy endorsing the use of CSS in transportation project development:

"It is the policy of the Indiana Department of Transportation (INDOT) to incorporate context sensitive solutions [design] into the development, construction and maintenance process for improvements to the state jurisdictional transportation system. The process for incorporating context sensitive solutions is intended to establish a basis for the development, construction, and maintenance process to incorporate a community's character and desires in transportation improvements. The context sensitive solution process is intended to be a flexible approach in allowing for latitude and to enhance environmental, scenic, historic and unique community elements into a transportation improvement. INDOT believes that the implementation of context sensitive solutions [design] will allow transportation officials, with input from community stakeholders, to strike a balance between providing safe, cost effective and efficient highway facilities while protecting and enhancing environmental and community values.

"The establishment of context sensitive solutions incorporates accepted effective design practices. Context sensitive solutions allow ideas such as preservation of historic places, scenic and natural environmental enhancement, and community values to be considered within the objectives of mobility, safety and economics.

"Objectives of Context Sensitive Solutions [Design]:

- "The project satisfies the Purpose and Need as determined after consultation with a full range of community stakeholders.
- "The project is a safe facility for both the user and the community.
- "The project strives to preserve the community as well as environmental, economic, scenic, aesthetic, historic, and natural resources of the affected area.
- "The project is designed and built to minimize disruption to the community.
- "The project is seen as having added lasting value to the community.

"Principles of Context Sensitive Solutions [Design]:

- "Communication with all stakeholders is an open, honest, early, and continuous process.
- "Involvement of a full range of stakeholders including the public in the planning, scoping (engineering assessment), environmental and design phases with the purposes of the project clearly defined.
- "Examination of multiple alternatives in the highway development process tailored to meet the unique circumstances of the project area. The process will strive to achieve a balance between safe and efficient highway facilities and protecting and enhancing community values.
- "A public involvement process that is tailored to the project.
- "Developing an understanding of community values and unique settings during the planning, scoping (engineering assessment), and environmental phases of the process.

- "Incorporation of a full range of tools for communication of project aspects."

Statement of INDOT Policy for Contact Sensitive Solutions (approved March 3, 2002).

To design and construct a freeway that is truly sensitive to the environment through which it will traverse, INDOT and FHWA will seek the continued assistance from the communities near the corridor through Tier 2 design and construction phases of the project. For this reason, Community Advisory Committees (CACs) have been established in each Tier 2 NEPA study section. Early in Tier 2, INDOT and FHWA worked with the local officials, MPOs, and others to identify specific representatives from neighborhood groups, emergency response personnel, schools, local advocacy groups, etc., to be members of each CAC. INDOT and FHWA routinely meet with the CACs to describe the status of the project, ask them to distribute information to their constituents, and to also seek feedback from them and their constituents. In addition to the CACs, INDOT and FHWA continue to have regular public information meetings about the project.

The specific outcome of CSS will depend, in part, on input from the CACs. The use of CSS and CACs may result in:

- Improving the aesthetics of the highway by planting native wildflowers, minimizing riprap on sideslopes and in ditches, and using attractive structures (e.g., bridges, retaining walls, signs, etc.)
- Using tall lighting and wildlife passages at key locations along the interstate to reduce wildlife impacts. In Section 2, INDOT and FHWA have committed to provide wildlife crossings at four locations. The four Section 2 locations are at the Patoka River crossing, the Flat Creek crossing, the crossing of the East Fork of the White River, and the crossing of the tributary to Jackson Pond. In addition, multiple other structures within Section 2 will provide for wildlife crossing as well.

Wetland Mitigation—Wetlands are an important natural resource because they support rich biological communities and provide floodplain protection. The construction of this project will impact wetlands of varying types. The majority of impacted wetlands are expected to be forested wetlands. To mitigate for these wetland losses, INDOT and FHWA will follow the mitigation ratios listed in their Wetlands MOU (signed January 28, 1991). The MOU was developed to ensure that wetland impacts are avoided, minimized, and mitigated to compensate for the loss of wetland functions and values. In Section 2, several important steps have been taken to avoid and minimize impacts to wetlands. In Tier 1, FHWA and INDOT coordinated with the USFWS to identify a location for crossing the Patoka River Bottoms wetlands complex at its narrowest point within the area proposed for the Patoka River National Wildlife Refuge. This location would minimize the potential for impacts to wetlands and forests within this sensitive area. A narrowed transportation corridor of only approximately 420 ft in width was reserved for I-69 on land that is not currently owned by the Refuge. In addition, FHWA and INDOT committed to bridge the entire width of the Patoka floodplain at this location to further limit impacts and maintain wildlife corridors. There was also a commitment to bridge the entire width of the Flat Creek floodplain. Considerable effort was also devoted to minimizing wetland impacts during the

development of the alternative alignments within the approved Tier 1 corridor. Details of proposed wetland mitigation are presented in Section 7.3.9 of this chapter.

Wetland mitigation sites are preferred in areas connected to existing wetlands and forests that currently provide habitat for both federal and state listed threatened and endangered species. It is INDOT's intention to restore wetlands in areas that have the greatest opportunity to develop into naturally functioning wetlands and provide habitat for threatened and endangered species. Such mitigation sites will be designed, constructed, and monitored. Once a site has become established, the site may be donated to an appropriate local or governmental agency. All mitigation sites will have a deed restriction on them identifying them as mitigation sites and protecting them in perpetuity from future disturbance. Each wetland will be designed with the assistance of appropriate environmental review agencies to include habitat and structures (e.g., nesting boxes, platforms, water control, etc.) for specific wildlife species. Signage will be erected along the boundary of mitigation sites to protect these areas from mowing and herbicide spraying. See Figures 7-1, 7-2, and 7-3 (pg. 7-41) for views of a wetland mitigation site.

Tier 1 Conceptual Mitigation Plan

For Section 2, four different potential mitigation sites were identified in the *Revised Tier 1 Conceptual Forest and Wetland Mitigation and Enhancement Plan* (see Appendix P of this EIS document):

- The Patoka River mitigation site is located along or near the Patoka River National Wildlife Refuge, west of the area crossed by approved Alternative 3C. These bottoms have shown the highest biodiversity crossed by the Alternative 3C. Historically, much of the Patoka River bottoms were altered by agriculture and mining; however, many opportunities exist today for mitigation. The proposed design is a shallow-water, slough-like habitat open possibly to view from a proposed visitor's center[1]. Such a habitat would attract ducks and geese, along with various-sized wading birds. Of special interest would be whooping and sandhill cranes. A cane marsh would be located at a slightly higher elevation with prairie vegetation at even higher elevations. Bottomland woods of oak and hickory would be provided, as appropriate, for a visual barrier where needed. This mitigation site would provide an increase in summer roosting habitat for the Indiana bat. Currently, there is one primary (dead unknown species) and one secondary roost tree (silver maple) within this proposed mitigation area. Interchanges on I-69 that would serve the refuge are proposed at about five miles to the south at SR 64 and about seven miles to the north at SR 61/56.
- The Flat Creek mitigation area is located west of SR 57 within the acquisition boundary for the Patoka River National Wildlife Refuge. This area serves as great habitat for the copperbelly watersnake, which has been confirmed by many of the local residents and USFWS personnel. In fact, this mitigation site is within the core habitat for the copperbelly watersnake. A post-lactating Indiana bat was captured in this area in the summer of 2004. This area will be a prime area for the addition of core forest area for the benefit of interior forest dependent bird species. There are currently several hundred

[1] The visitor center, if constructed, would be a project planned, funded, and administered by the Refuge.

acres for sale within this area that may be sold for coal rights, logging or other reasons. Opportunities exist in this mitigation area to improve water quality at site locations and for hundreds of acres. It could also develop and preserve habitat for many species such as the Indiana bat, copperbelly watersnake, evening bat, bald eagle, and blue heron.

- The mitigation site near the East Fork of the White River is located northeast of Petersburg where the East and West Fork of the White River converge. This mitigation site would be planted as a flatwoods of oak and hickory with numerous openings planted in prairie plants and cedars with hawthorns. It could also include small pockets of water with wetland plants. This site would be connected to the banks of the East Fork and possibly the West Fork near their confluence and provide an excellent opportunity for developing habitat for the Indiana bat, bald eagle perches for nesting and feeding, and water quality improvements. A reproductive female Indiana bat and an evening bat were caught within this proposed mitigation site. The proposed design for this mitigation site would be a savannah-type habitat, i.e., an open upland to bottomland woods with many clearings planted with prairie grasses and plants suited to sandy soils. The edge of these woods and open clearings should be planted with cedars and hawthorns for use by loggerhead shrike. Near the East Fork, raptor nesting platforms should be erected for use by various birds of prey. Dead snags should be protected for use by the Indiana bat, evening bat, and other species. This mitigation site would provide an increase in feeding and nesting perches for the bald eagle and increase summer roosting habitat for the Indiana bat. Improving water quality in this area could increase the potential for mussels in the East Fork of the White River.

- The location of Veale Creek proposed mitigation site is immediately east of the confluence of Veale Creek and Hurricane Branch. There are a total of five roost trees found within this mitigation site. Of the five roost trees, two of them were primary roosts. The roost tree species consisted of two shagbark hickories, two American elms, and one dead unknown. This area around Veale Creek could be purchased and enhanced to further its potential for optimal Indiana bat habitat. The mitigation site would be planted as a flatwoods of oak and hickory with numerous open areas planted with prairie grass species. Existing wetland woods along Veale Creek will be extended to mitigate for wetland losses and to provide additional core forest areas. In addition, this site could be used to revegetate the barren riparian areas of Veale Creek, which lack woody vegetation that lower water temperatures and stabilize its banks. This will also provide an excellent opportunity for developing habitat for the Indiana bat and water quality improvements. This area could also serve as an excellent haven for prairie-dependent animal species by providing buffers surrounding the wetland woods areas that would provide prairie, fence row, and some oak savanna-type habitats for grassland bird species.

It is important to note that mitigation for the Indiana bat is focused within the Summer Action Area. Indiana bat summer habitat will be created and enhanced through wetland and forest mitigation focused on riparian corridors and existing forest blocks to provide habitat connectivity. All four sites named above are in the Action Area. The Plan noted that the mitigation sites identified in the Plan were conceptual, and that specific mitigation sites would be determined during or after Tier 2, and further noted that INDOT would acquire mitigation sites only from willing sellers at fair market value.

Forest Mitigation—Forests are a large and important resource in Indiana. Indiana's forests make significant environmental and economic contributions, including timber, employment, outdoor recreation, protection of soil and water resources, and habitat for many plant and animal species, including threatened and endangered species. Prior to European settlement, forests covered about 85% of the state. Forested land was converted to farmland as farming became a central part of Indiana's economy. The acreage of forested land reached its low during the early 1900s and increased until the 1990s. Today, forested land in Indiana appears to have reached a plateau. Approximately 20% of Indiana is forested, and most of the forested land is located in the southern half of the state.

For the I-69 Evansville-to-Indianapolis project as a whole, INDOT and FHWA committed to mitigate impacts to upland forests at a 3:1 ratio. Mitigation goals are to replace direct forest impacts at a 1 to 1 ratio and provide an additional 2 to1 ratio of forest preservation. The 3 to 1 ratio will be achieved for the overall I-69 Evansville-to-Indianapolis project; the ratio for an individual Tier 2 section could be higher or lower than 3 to 1. Based on the 3 to 1 ratio and the estimated 213 acres of direct impact to upland forests with Section 2's preferred alternative, a total of 639 acres could be needed for mitigation—213 acres of new plantings to replace acres directly impacted and 426 acres of existing forest to be preserved. In the case of any forests in a floodway, a 2 to 1 replacement or 10:1 preservation ratio would apply, as applicable by the IDNR Construction in a Floodway permit. If needed, the necessary permit would be secured before or during the design phase of the project.

In Section 2, the potential forest mitigation sites are the same as those described above for wetland mitigation. This mitigation will be accomplished either by purchasing and protecting existing tracts of forests or by planting trees. Preference will be given to areas contiguous to large forested tracts that have recorded federal and state listed threatened and endangered species. Coordination with resource agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. All forest mitigation lands will be protected in perpetuity via conservation easements or other appropriate measures.

I-69 Community Planning Program—The I-69 Community Planning Program will set in place a regional strategy for providing resources to local communities to manage the growth and economic development associated with I-69. The program will provide grants for local communities (cites, towns, and counties) to prepare plans to manage potential new developments along with the I-69 corridor. The local communities could use these grants to prepare transportation land use plans, zoning and subdivision ordinances, and special highway corridor "overlay zones" for development. The total cost of this program is budgeted at $2 million. The program has the following objectives:

- Develop regional strategies and resources to allow communities to achieve their desired vision of how that community will develop in the future;
- Provide resources to establish a local planning process for communities to develop a desired future plan;

- Develop growth management procedures to control development in accordance with local plans;
- Develop economic development strategies consistent with the communities' plans;
- Provide resources for local communities to implement growth management to achieve their plans; and
- Develop protective strategies for environmentally sensitive areas, e.g., in the vicinity of the Patoka River Wildlife Refuge, and karst-related features (caves, sinkholes, sinking stream basins, springs, and others).

The I-69 Community Planning Program is a two-phase effort:

- **Phase 1** is a regional planning assessment and development of regional planning strategies and resources for the entire I-69 corridor impact area. It includes establishing partnerships, inventories, review of regulations and legislation, identification of needs, preparation of processes and models, identification of environmentally sensitive areas, farmland protection strategies, workshops, and providing technical planning support.
- **Phase 2** will provide for the actual grants to local communities for the preparation of local plans and growth management ordinances. It will include public involvement activities, planning framework and corridor land use planning, economic development strategies, model planning ordinances, and developing a plan implementation program.

Under this approach, INDOT's role will be to provide technical and financial assistance to communities that desire to develop plans for growth related to I-69. No local community will be required to participate in the program. The grant applications were made available to eligible communities in August 2007. Eligible communities in Section 2 are Gibson, Pike, and Daviess Counties, and the cities of Oakland City, Petersburg, and Washington, and all have elected to participate. Daviess County and the City of Washington jointly have received a grant of $100,000 in the first round of the program, as have Pike County and the City of Petersburg. Gibson County has also received a grant for $50,000 in the program's second round. Additional information on the I-69 Community Planning Program is presented in Appendix Q.

Geographic Information System (GIS) – A GIS is an interactive network of digital maps (i.e. layers) that depict various environmental, social, and economic resources. Each set of resources (e.g. wetlands, forests, historic resources) is mapped on a different layer, which can be overlaid on other layers for purposes of determining the impacts of project alternatives on specific resources. INDOT and FHWA, along with the Indiana Geological Survey (IGS), developed a comprehensive GIS dataset covering the entire Tier 1 26-county study area in southwest Indiana to assist in assessing impacts of the I-69 Evansville to Indianapolis project. This GIS for southwest Indiana is comprised of approximately 170 different layers of aquatic, terrestrial, mineral, social, and economic information for the 26 counties. Most of the information contained in these layers was obtained from other state and federal agencies including the USEPA, US Bureau of Census, IDNR, IDEM, IGS, and FEMA. With the publication of the I-69 Tier 1 DEIS, the IGS made this information available to all agencies and the public on CD

ROM.[2] Building on the southwest Indiana GIS, INDOT and FHWA subsequently developed a statewide GIS atlas that consists of layers for similar resources for each county throughout the State of Indiana. Digital data and on-line maps for the statewide GIS are available on the Indiana Geological Survey (IGS) website at http://igs.indiana.edu/arcims/statewide/index.html.

Update County Historic Surveys – IDNR, Division of Historic Preservation and Archaeology (DHPA), manages the Indiana Historic Sites and Structures Inventory (IHSSI) and performs the duties of the State Historic and Preservation Officer (SHPO) in the Section 106 process. Many of the publications upon which the SHPO relies to assemble its inventory are older and require updating or require underwriting of publication costs associated with the printing of additional documents. INDOT and FHWA will provide financial and technical assistance to the SHPO to support the completion of field surveys and publishing of County Interim Reports for the inventory.[3] Also, INDOT and FHWA will cooperate with the SHPO to provide the most current information on historic structures in counties that the selected alternative traverses (i.e., Gibson, Pike, Daviess, Martin, Monroe, Morgan, Johnson, and Warrick Counties, and the portion of Marion County that includes Decatur, Perry, and Franklin townships). This commitment was developed through the Tier 1 Section 106 process. The Section 106 process requires federal agencies to consider impacts to historic and archaeological resources when undertaking major federal actions. See Appendix P of the Tier 1 FEIS for the Section 106 Memorandum of Agreement (MOA), which contains these commitments.

The SHPO has received a copy of the Historic Property Report for Section 2. After the Section 2 FEIS has been published, the SHPO will be provided with GIS data and the completed IHSSI survey forms, and the surveys for Gibson and Pike Counties will begin. The survey for Daviess County can begin after the FEISs in both Sections 2 and 3 are published. (Note: these surveys are outside the Area of Potential Effects studied as part of the Section 106 process to identify impacts by the project on historic resources.)

Biological Surveys on Wildlife and Plants – The Endangered Species Act requires federal agencies to consult with the USFWS and ensure that their actions do not jeopardize any federally listed threatened or endangered species or significantly impact or adversely modify any critical habitat of those species. Therefore, during Tier 1 studies, formal and informal consultation with USFWS was conducted. The consultation provided for INDOT and FHWA to submit a Tier 1 Biological Assessment (BA) of potential impacts of the Evansville-to-Indianapolis project on threatened and endangered species. Within the counties through which the alternatives traverse, there are two federally listed endangered species—the Indiana bat and the fanshell mussel, and one federally listed threatened species—the bald eagle. The conclusion of the consultation process included the issuance of a Tier 1 Biological Opinion (BO) by USFWS.

Coordination with USFWS during Tier 2 resulted in the re-initiation of Tier 1 formal consultation for the Indiana bat. Additional information provided by Tier 2 bat surveys prompted USFWS to re-examine the effects of the project as a whole on this species. Current information

[2] See http://igs.indiana.edu/geology/maps/gisSouthwest/ofs0123Readme.cfm for further information.
[3] These surveys will be completed in accordance with a Memorandum of Agreement following approval of the Record of Decision for the Section(s) located within each specific county.

shows no bald eagle nests within the corridor, and mussel surveys found no eastern fanshell mussels. Thus, there has been no re-initiation of formal consultation on the bald eagle[4] or eastern fanshell mussel.

The re-initiation of formal consultation resulted in the preparation of an Addendum to the Tier 1 BA which was provided to the USFWS. The BA Addendum detailed information gathered on the Indiana bat during Tier 2 studies and after the original BO was issued. Upon completion of its review of the Addendum, USFWS submitted a revised Tier 1 BO, including an Incidental Take Statement, to FHWA and INDOT on August 24, 2006. In the revised Tier 1 BO, USFWS confirmed its original opinion that the I-69 project is "not likely to adversely affect the eastern fanshell mussels" (pg. 37); and "is not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle." Regarding the Indiana bat, USFWS concluded "the proposed extension of I-69 from Evansville to Indianapolis will have greater impacts to Indiana bats than were originally considered," but the project "is not likely to jeopardize the continued existence of the Indiana bat and is not likely to adversely modify the bat's designated Critical Habitat."

Pursuant to the BO, INDOT is cooperating with USFWS, IDNR, and other agencies and organizations to complete the following: (1) biological surveys for rare and endangered species; (2) surveys of known Indiana bat hibernacula (i.e., caves); (3) funding of research for discovery of new hibernacula; (4) funding of research on autumn and spring habitat for the Indiana bat; (5) funding for captive-rearing research on mussels; and (6) funding for the writing and printing of informative pamphlets on bats, bald eagles, and mussels in Indiana. Specific surveys conducted in Section 2 include Indiana bat surveys, mussel surveys of the Patoka River and East Fork of the White River, amphibian, reptile, and mammal surveys; a terrestrial crayfish survey; within the Patoka River National Wildlife Refuge boundary in the Patoka River Bottoms; a fish survey; a botanical field survey, and a bird survey.

Additional coordination between INDOT, FHWA and USFWS resulted in the reinitiation of formal consultation on the grounds of additional information found during Indiana bat surveys in 2004-2005. Additional mist netting was conducted during the summer of 2005 and results were submitted to USFWS for their review. All survey results have been included as an Addendum to the previous Tier 1 BA.

On March 7, 2006, the FHWA requested to reinitiate formal consultation for the Indiana bat and submitted a Tier 1 BA Addendum that detailed additional impacts to Indiana bats stemming from new information regarding this species' presence and abundance within the project's action areas, as revealed during Tier 2 field studies. Formal consultation was not reinitiated for the bald eagle or the eastern fanshell mussel. However, based on additional consultation, a Revised BO dated August 24, 2006 was provided, in which USFWS confirmed its previous concurrence with the determination that "the I-69 project *is not likely to adversely affect* the eastern fanshell

[4] On July 9, 2007, the USFWS removed the bald eagle from the list of endangered and threatened species under the Endangered Species Act. Since that time, however, the bald eagle has been protected by the Bald and Golden Eagle Protection Act, 16 U.S.C. §§ 668-668d. On May 20, 2008, the USFWS issued regulations governing permits under the Bald and Golden Eagle Protection Act for the projects that obtained an incidental take permit under the ESA. 50 C.F.R. Part 22. FHWA and INDOT intend to comply with the Bald and Golden Eagle Protection Act permit requirements established by FWS prior to construction.

mussel…and the project is still *likely to adversely affect, but not jeopardize,* the bald eagle." (USFWS, August 24, 2006)

The revised Tier 1 BO replaces the December 3, 2003 BO. Based on its analysis of the updated information, USFWS reaffirmed the no-jeopardy finding. USFWS concluded "the proposed extension of I-69 from Evansville to Indianapolis will have greater impacts to Indiana bats than were originally considered," but the project "is not likely to jeopardize the continued existence of the Indiana bat and is not likely to adversely modify the bat's designated Critical Habitat." Prior to publishing the Final Environmental Impact Statement, a Tier 2 BA specific to Section 2 will be submitted to USFWS.

Bridging of Floodplains—Floodplains are a vital part of a river or stream ecosystem. They are important because they act as flood buffers, water filters, and nurseries, and are major centers of biological life in the river or stream ecosystem. They are important for maintenance of water quality since they provide fresh water to wetlands and backwater areas, dilute salts and nutrients, and improve the overall health of the habitat of many species of birds, fish, and plants. They are important biologically since they represent areas where many species reproduce and are important for breeding and regeneration cycles. The complete bridging of a floodplain avoids and minimizes habitat impacts and maintains wildlife corridors. Similarly, it minimizes any floodplain encroachments, reduces significantly the loss of wetlands, forests, and farmland, and minimizes impacts to threatened and endangered species.

The Tier 1 ROD identified a commitment for bridging the entire Patoka River and Flat Creek floodplains. In Tier 1, the project corridor was narrowed to approximately 420 feet in the vicinity of the Patoka River to avoid wetlands and the national refuge east and west of the I-69 corridor. The corridor traverses the narrowest section of floodplain in the vicinity of the river crossing. Complete bridging of the floodplain is being proposed at the Patoka River using twin 0.8-mile-long structures and clearance to accommodate the passage of wildlife beneath it. These structures will be also designed not to drain stormwater runoff directly into the wetlands, but to contain and channel it towards the end of the bridges, where it should then be adequately treated to remove sediment and any other pollutants before being allowed to enter the Patoka River NWR. All areas within the floodplain will be restored to original contours after construction of the bridges.

The I-69 crossing of Flat Creek does not traverse a FEMA 100-year floodplain. Nonetheless, following the Tier 1 commitment, any potential Flat Creek floodplain as defined from hydraulic modeling during the final design will be spanned as committed to in the Tier 1 FEIS.

Distance Learning—INDOT and FHWA have been involved and will continue to promote distance learning opportunities for students in Southwest Indiana. These opportunities will come by way of interactive learning utilizing videoconference concepts. Various elementary schools and high schools in Southwest Indiana have participated in this educational program during the study. INDOT and FHWA consider this program invaluable to students and the public in learning about Indiana and its resources.

7.3 Section 2 Mitigation Measures and Commitments

This section lists specific proposed mitigation measures and commitments for each resource category in Section 2. Tracking of mitigation commitments and mitigation activities associated with each will be performed by INDOT within a GIS database and spreadsheets as appropriate. INDOT has coordinated with agencies to identify agency-specific information to be included in the database. INDOT will provide to permitting agencies and USEPA a tracking summary on an annual basis. The summary will identify the mitigation commitments and describe the status of the activities-to-date associated with each commitment.

7.3.1 Land Use

Section 2 is predominantly rural in character, dominated by scattered single-family residential and agricultural land uses. Most of the agricultural land is in row crops, consisting of primarily corn and soybeans. The remaining agricultural land is in pasture. Each county also has a considerable amount of upland habitat, dominated by forested land. Located just north of Petersburg are two power plants, Indianapolis Power & Light (IPL) and Hoosier Energy. There is also a substantial amount of coal mining activity within Section 2. As of November 2007, information provided by IDNR Division of Reclamation reports a total of 22 current coal mining permits for activities within five miles of the approved Section 2 corridor within Gibson, Pike and Daviess Counties. Of these, 14 were reportedly in active operation, with a total permitted acreage of 66,180 acres (approximately 103 square miles). Approximately 60% of this area is for surface mining, while the remaining acreage is for underground mines, where the area of surface disturbance would actually be much less. Six of the active permits, including four surface mines, one underground mine, and one tipple area, are located at least partially within the Section 2 corridor in Gibson and Pike Counties. These six permitted areas cover more than 28,700 acres within the immediate vicinity of I-69, and will thus be affecting land uses in an area more than 15 times the entire Section 2 right-of-way.

The following measures will be utilized to mitigate the potential impacts of the I-69 project on land use patterns:

1. **I-69 Community Planning Program**—The I-69 Community Planning Program will help to set in place a regional strategy for providing resources to local communities to manage the growth and economic development associated with I-69. Gibson, Pike, and Daviess Counties and the cities of Oakland City, Petersburg, and Washington are all participating in the program, and have received grants. See additional details of the program on page 7-7 above, and on the I-69 project website at www.i69indyevn.org/CommunityPlanningProgram. Appendix Q of this document, *Community Planning Program Status*, describes the current status of the program in Section 2 jurisdictions.

2. **Context Sensitive Solutions (CSS)** is a collaborative, interdisciplinary approach that involves stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining

safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist.

Within Section 2, a Community Advisory Committee (CAC) was developed in the fall of 2004 to facilitate communication between project team members and representatives of key constituent groups in the project area. Through a series of four meetings, committee members learned details of the project and provided feedback on such subjects as local needs and plans, community issues, and the development of alternatives. Local access to the interstate, the need to minimize coal truck traffic through Petersburg, farmland impacts, economic development, and the potential impact of the project on emergency response times and school bus routing were the issues most frequently raised by CAC members as important considerations in planning the Interstate's location and design features. The information they provided regarding farming operations, frequently-flooded local roadways, local travel patterns, local development plans, and critical emergency response routes played a crucial role in determining local road closures and helped guide the development of alternatives that avoid or minimize farmland severances, and maintain the connectivity of many local roads. The importance of including the North Pike and South Daviess interchanges in the preferred alternative was a recurring theme of the CAC.

Another CSS measure addressed resource agency concerns with respect to wildlife crossings of the interstate. Within Section 2, wildlife crossings for large mammals are proposed at four locations: the Patoka River crossing, the Flat Creek crossing, the crossing of the East Fork of the White River, and the crossing of the tributary to Jackson Pond. Additional structures will be provided at Prides Creek, Mud Creek and Veale Creek that will provide opportunities for wildlife to cross beneath the highway. Additional details on these proposed wildlife crossings are presented in Section 7.3.13 of this chapter.

Another measure to better adapt the proposed facility to its rural environment is the application of a widened median (a bifurcated section) over a 1.5-mile portion of the route. This would allow development of a broader wooded median separating the opposing lanes, which would shield the view of the oncoming traffic and provide a more natural viewscape.

No additional CSS issues or options have been identified in Section 2 at this time. Further public input will be received during the public hearing and in the final design stage.

7.3.2 Social and Neighborhood

Section 2 is rural in nature and residences are generally located on scattered sites adjacent to farm fields. The preferred alternative would acquire 53 residential properties. Other residences that would be affected by the preferred alternative are within or near the proposed interchanges or on scattered locations throughout the project corridor. No low income or minority communities would be impacted by the project in Section 2. The following measures will be utilized to mitigate impacts on these residential areas or local communities:

1. **Local and Access Roads**—Where reasonable and cost effective, local access roads (e.g., frontage roads and road relocations) will be used to maintain accessibility for residences, farm operations, businesses, churches, schools and other land uses. For the preferred alternative, approximately 30 local service roads are being considered to minimize landlocked parcels.

2. **Road Closures**–Efforts have been made to minimize the disruption of local crossroads and minimize impacts to school bus and emergency provider routes. The alternatives that were developed avoid closure of local roads where possible. Proposed road closures were coordinated with the CAC, emergency service providers, and others. A total of 12 roads are currently planned to be closed at the point where those roads cross the I-69 corridor. At each of these road closures, cul-de-sacs or other means will be provided to allow school buses, snow plows, and other large vehicles sufficient turn around space. Appropriate signage advising of the road closures will be placed at the nearest intersections.

3. **Relocations**–Considerable efforts have been directed toward minimizing the number of residential relocations required to the lowest practicable number. All acquisitions and relocations required by this project will be completed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, 49 CFR (Code of Federal Regulations) 24, and Title VI of the Civil Rights Act of 1968. No person displaced by this project will be required to move from a displaced dwelling unless comparable replacement housing is available to that person. INDOT will take required actions to ensure fair and equitable treatment of persons displaced as a result of this project up to and including providing replacement housing of last resort as defined in 49 CFR 24.404. Relocation resources for this project are available to residential and business relocatees without discrimination. Advisory services will be made available to farms and businesses, with the aim of minimizing the economic harm to those businesses and farm establishments.

   There are no unique relocation situations known at this time in Section 2. If a displaced resident cannot be relocated due to the unavailability of comparable housing, or because comparable housing is not available within the statutory limit of the Uniform Act, then housing of last resort will be made available to these persons. Last resort housing includes, but is not limited to, rental assistance, additions to existing replacement dwellings, construction of new dwellings and dwelling structure relocation. Replacement dwellings must meet the requirements of decent, safe, and sanitary standards as established by FHWA.

   Relocation resources would be available to all residential relocatees without regard to race, creed, color, sex, national origin, or economic status, as required by the Uniform Act and Title VI of the Civil Rights Act of 1964. Financial assistance will be available to eligible persons displaced by this project. Payments received are not considered as income under the provisions of the Internal Revenue Code of 1954; or

for the purpose of determining any person's eligibility, or the extent of eligibility, for assistance under the Social Security Act or any other federal law.

4. **Cemeteries** - The preferred alternative avoids all cemeteries and satisfies the state requirement that any proposed right-of-way be located at least 100 feet from any cemetery. Battles Cemetery is the nearest cemetery to the project, and it is approximately 700 feet from the proposed construction limits of the preferred alternative. If the preferred alternative disturbs the ground within 100 feet of a cemetery gravesite, a development plan will be completed and submitted to IDNR Division of Historic Preservation and Archaeology during the design phase of project development as per the Indiana Historic Preservation and Archaeology Law (IHPAL)

7.3.3 Noise

Section 2 is a predominantly rural area with only scattered homes in the immediate vicinity of the alternatives. The following measures will be considered to mitigate noise impacts of the project on noise-sensitive receivers:

1. **Noise Abatement Measures**—Noise abatement measures have been analyzed. These included roadway geometrics (see next point) and noise barriers. In Section 2, noise analysis predicts that up to six noise monitoring sites (representing up to 16 receivers) may potentially experience noise impacts which either approach or exceed the Noise Abatement Criteria (NAC). The construction of noise barriers has been considered at these locations, and has been determined to not be "reasonable" within the meaning of the INDOT Noise Policy for any of the sites where the NAC is exceeded. (See Section 5.10, *Highway Noise*.) The cost to provide adequate noise protection at these sites exceeds INDOT's per-receiver cost criterion. The reasonableness and feasibility of constructing noise barriers for the preferred alternative at these locations will be re-evaluated during the final design phase and any measures found to be reasonable and feasible will be incorporated into the project.

2. **Roadway Geometrics** – The final design of the preferred alternative may include shifting the alternative both vertically and horizontally, wherever feasible, to minimize noise impacts where other factors are not prohibitive.

3. **Construction Noise** – Consideration will be given to providing reasonable and feasible noise abatement early in construction for the added benefit of mitigating construction noise. Construction vehicles will be required to follow INDOT *Standard Specifications* on controlling noise.

4. **Coordination Among Local Planning Authorities.** Since a portion of the proposed project would be located on a new roadway, the potential does exist for local officials and developers to help minimize adverse noise impacts through the use of careful land use planning. With regard to currently undeveloped land, the creation of a "buffer zone" or locating noise sensitive developments a reasonable distance away from the project

would help minimize future noise impacts. Local planning authorities will be provided with the 66 dBA noise contour mapping and can utilize it to develop noise compatible land uses outside the 66 dBA buffer zone. This mapping will be provided in the Final EIS for this project. Copies of this EIS will be provided to Gibson, Pike and Daviess county officials for use in noise-sensitive land use planning.

7.3.4 Construction

Section 2 will be constructed as a freeway using Best Management Practices. The following measures will be utilized to mitigate construction impacts:

1. **Construction Plans**—Environmentally sensitive locations (e.g., wetlands, historic structures, archaeology sites, sinkholes) in the general area will be clearly shown on construction plans. Sites within the right-of-way will be delineated. These sites will not be permitted for use as staging areas, borrow, or waste sites.

2. **Erosion Control**— Erosion control devices will be used to minimize sediment and debris from leaving the project site in runoff. Timely revegetation after soil disturbance will be implemented and monitored. Revegetation will consider site specific needs for water. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Any riprap used below the high water mark will be of a large diameter in order to allow space for habitat for aquatic species after placement. Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow.

3. **Ground Water—**To protect sources of potable water, grassy swales will be constructed to divert stormwater from the road to ditches and streams. Construction methods will be used to reduce temporary turbidity caused by construction.

4. **Air Quality**—Construction equipment will be maintained in proper mechanical condition. Fugitive dust generated during land clearing and demolition procedures will be controlled by proper techniques. All bituminous and Portland cement concrete proportioning plants and crushers would meet the requirements of IDEM. Dust collectors must also be provided on all bituminous plants. Dry, fine aggregate material removed from the dryer exhaust by the dust collector must be returned to the dryer discharge unless otherwise directed by the project engineer.

5. **Parking and Turning Areas**—Prior to construction, planning for parking and turning areas for heavy equipment will be located outside the construction limits, but within the right-of-way, to minimize soil erosion and impacts to identified resources.

6. **Tree Cutting**— To avoid any direct take of Indiana bats, no trees with a diameter of 3 or more inches will be removed between April 1 and September 30. This time period is more restrictive than the limitations required by the Biological Opinion, but

is being adopted voluntarily by INDOT to provide additional protection. Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits. In the median, outside the clear zone and considering other safety factors, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable. Forested medians will be managed following IDNR State Forest timber management plan.

7. **Revegetation**—Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be used a reasonable distance beyond the clear zone to ensure a safe facility. Revegetation of disturbed soils in the right-of-way and medians will utilize native grasses and wildflowers as appropriate, such as those cultivated through INDOT's Roadside Heritage program[5].

8. **Spill Prevention/Containment**—During construction of I-69, any spill incidents on site will be handled in accordance with INDOT spill response protocol as outlined in their Construction Activity Environmental Manual and Field Operations Manual Procedure 20. The Rule 5 permit that contractors must obtain will require that all have spill containment plans in their contract documents.

9. **Heavy Blasting—**Heavy blasting is not anticipated; however, in the event it is required, strict blasting specifications will be followed.

10. **Maintenance of Traffic**—A Traffic Management Plan will be developed in design through coordination with local agencies and schools to ensure that appropriate access is maintained during construction with as little disturbance to emergency routes as possible. Early notice of detour routes will be provided to the local communities.

11. **Construction Noise**—Construction noise abatement measures may be required in areas where residences or other sensitive noise receivers are subjected to excessive noise from highway operations. Consideration will be given to providing reasonable and feasible noise abatement early in the construction phase to mitigate construction noise. Noise impacts could be controlled through the regulation of construction time and hours worked, using noise-controlled construction equipment, limitations of construction vehicles during evening and weekend hours and by locating equipment storage areas away from noise sensitive areas.

12. **Construction in a Floodway—**Construction in a Floodway permit(s) will be applied for before or during the design phase of this project. This construction work will be carefully controlled to minimize impacts to streams, wetlands and wildlife habitat. Within the Patoka River floodplain, all areas will be restored to original contours after construction of the bridges.

[5] INDOT's program was developed in cooperation with FHWA, IDNR, and IDEM and funded through a federal Transportation Enhancement Project grant. The program promotes the use of native plants in state rights-of-way. The plants are grown on state-owned seed farms. The native plants not only provide aesthetic appeal along the highways, they also save the cost of frequent mowing, since the wildflower plantings are mowed only once a year, at the end of their growing season.

13. **Surveys**—The undersides of existing bridges that must be removed for construction of I-69 will be visually surveyed and/or netted to determine their use as night roosts by Indiana bats during the summer. (Note: This work has been completed. No bats were found at bridges in Section 2, and there will not be impacts to bats due to bridge work as part of the project.)

14. **Memoranda of Understandings (MOUs)**—Construction will adhere to the Wetland MOU (dated January 28, 1991). The Wetland MOU minimizes impacts to the Indiana bat by mitigating for wetland losses, and creating bat foraging areas at greater ratios than that lost to the project.

15. **Equipment Maintenance—**Construction equipment will be maintained in proper mechanical condition. All servicing of construction equipment will take place in a designated maintenance area away from environmentally sensitive areas.

16. **Borrow Sites/Waste Disposal—**Solid waste generated by clearing and grubbing, demolition or other construction practices will be removed from the location and properly disposed. Burning of construction related debris would be conducted in accordance with all local, state, and federal regulations. All burning will be conducted a reasonable distance from all homes and care will be taken to alleviate any potential atmospheric conditions that may be a hazard to the public. All burning will be monitored. Contractors are required to follow safeguards established in INDOT's *Standard Specifications* (Section 203.08 Borrow or Disposal) that include obtaining required permits, and identify and avoid or mitigate impacts at borrow/disposal sites that contain wetlands or archaeological resources. Special Provisions will include prohibiting tree clearing from April 1 to September 30 within the Summer Action Area of the Indiana bats, as identified in the revised Tier 1 BO; and prohibiting the filling of wetlands outside the construction limits. Note that this prohibition would not extend to isolated ponds such as farm ponds and those developed from old borrow sites.

17. **Wetlands Within the Right-of-Way**—Wetlands within the right-of-way that are not within the construction limits will be delineated and protected from construction impacts.

18. **Construction Traffic on Historic Bridges** – In order to protect the historic bridges from possible damage, all construction traffic will be prohibited from using the two bridges on County Road 300 West (Pike County Bridges Nos. 81 and 246) within the Patoka Bridges Historic District.

7.3.5 Historic and Archaeological Resources

The Area of Potential Effects (APE) for the aboveground resources survey in Section 2 is centered on the 2,000-foot-wide corridor that was selected at the end of the Tier 1 Study as the preferred alternative. The length of the APE extends one mile south of Section 2's southern

terminus just north of SR 64 and one mile north of its northern terminus just north of US 50—for a total length of approximately 30.5 miles. The width of the APE is generally one mile on each side of the 2,000-foot-wide corridor, but extends beyond this limit as appropriate where alternative access considerations extend outside of the corridor. For archaeological resources, the APE measures approximately 350-400 feet in width based on the preferred alternative footprint. The Phase Ia archaeological field reconnaissance will be conducted for the APE of the preferred alternative only. Archival research and site file check focused on the larger study corridor, 2,000 feet wide, as defined in the Tier 1 FEIS.

There is one historic district located within the Section 2 APE which is listed in the National Register of Historic Places (NRHP), the Patoka Bridges Historic District on County Road 300 West just north of the Gibson County line. This historic district was created after FHWA issued the Tier 1 Record of Decision and after the publication of the Notice of Intent for the Section 2 Tier 2 project. In addition, three NRHP-eligible individual sites are located in the Section 2 APE. They are the Thomas C. Singleton Round Barn, located at the southwest corner of the intersection of SR 57 and County Road 450S, the Chapman-Allison Farmstead, encompassing the northwest and southwest corners of the intersection of County Road 50E and County Road 400S, and the SR 257 Bridge over Veale Creek, south of US 50 in Daviess County. It was determined that the project would have no adverse effects on the Thomas C. Singleton Round Barn, the Chapman-Allison Farmstead, or the SR 257 Bridge over Veale Creek. The project was determined to have an adverse visual effect on the Patoka Bridges Historic District. Regarding archaeological resources, 43 previously documented sites were identified through the Phase Ia literature review. Appropriate archaeological surveys will be conducted for the preferred alternative and the results published in the FEIS. These surveys may provide additional information pertaining to previously recorded archaeological resources, and other unrecorded sites may be located in the project area.

At the conclusion of Tier 1, INDOT and FHWA entered into a Section 106 Memorandum of Agreement (MOA). The Section 106 MOA includes the following stipulations and commitments between INDOT, FHWA, and the SHPO. The Section 106 consulting process in Section 2 during Tier 2 is in compliance with these commitments:

1. Section 106 Consultation during Tier 2 Studies

A. Tier 2 Sections. Section 2, as defined in the Tier 1 FEIS, is considered a separate undertaking for purposes of Section 106 consultation.

B. Applicable Requirements. FHWA conducted Section 106 consultation for Section 2 in accordance with all applicable Federal and Indiana state laws and regulations, including Section 106 of the National Historic Preservation Act (16 USC § 470f) and the Section 106 regulations (36 CFR Part 800), and also including 16 USC § 470hh and 16 USC § 470w-3, which require the confidentiality of archaeological site information to be maintained. Nothing in the MOA is intended to supersede or modify any requirement contained in the Section 106 statute, the Section 106 regulations, or any other applicable laws or regulations.

C. Coordination of Tier 2 Studies in Adjacent Sections. FHWA consulted with the SHPO regarding the coordination of Section 106 consultation activities in adjacent Tier 2 sections early in the development of this section.

D. Consulting Parties. During Tier 2, the same party has been allowed to be a consulting party for more than one section.

2. Tier 2 Section 106 Commitments and Conceptual Mitigation

As part of the Tier 1 MOA, INDOT and FHWA agreed to implement and/or fund the activities listed in this section as part of the Tier 2 environmental studies. The MOA also provided that additional commitments may be made, as appropriate, as an outcome of the Section 106 consultation process for each Tier 2 section. Due to the adverse visual effects on the Patoka Bridges Historic District, an MOA for Section 2 will be developed between INDOT and FHWA and agreed to by the SHPO. The MOA will include mitigation measures to be completed as part of the project and will be included with the FEIS. The mitigation summarized in the following paragraphs is preliminary and will be updated as a result of the MOA to be developed in consultation with the SHPO. Consulting parties have been provided with a worksheet on which to register mitigation measures that they wish FHWA and SHPO to entertain. Appropriate archaeological reconnaissance will be conducted for the preferred alternative. Additional mitigation or commitments will be offered should the results of the survey warrant them.

A. Avoidance and Minimization of Impacts in Section 2

1. In General. In accordance with the consultation process required under Section 106 and in accordance with other applicable laws, INDOT and FHWA sought ways to avoid, minimize, and mitigate adverse impacts to the environment, including adverse effects to historic properties.

2. Resources in Adjacent Sections. INDOT and FHWA ensured that the scope of work for Section 2 included an analysis of resources (including aboveground and archaeological resources) located just beyond the termini for Section 2. This analysis is intended to ensure that decisions reached in one section do not prematurely limit consideration of avoidance alternatives for resources in adjacent sections.

3. Alternatives Analysis in Tier 2 Studies. Section 2 considered alternatives for completing I-69 between the beginning and end termini. The range of alternatives considered in Section 2 was generally confined to the corridor selected in Tier 1. However, the Tier 1 Record of Decision (ROD) provides flexibility to consider alternatives outside the selected corridor when necessary to avoid significant impacts within the selected corridor. (pg. 8, Section 2.3.5). The Patoka Bridges Historic District is located in

an area where the nearby I-69 corridor is only 420 feet wide. Because of the narrowness of the approved corridor, there is very little difference between Alternatives A and B in this location. This corridor width and precise location was set by the I-69 Tier 1 Record of Decision, based upon continuing coordination with the USFWS begun during the preparation of their 1994 Final Environmental Impact Statement establishing the Patoka River National Wildlife Refuge. The Patoka EIS identified a general corridor at this location for a future highway, since it minimizes impacts to aquatic and other resources within the Refuge.

In addition to the adverse visual impact on the District, computer noise projections indicate that there will be an increase in traffic noise levels at the District, although the increase will not be great enough to constitute an adverse impact. Nonetheless, INDOT has also examined a variety of measures to reduce auditory effects on the District, as well as the adverse visual impacts. Shifting the I-69 alignment away from the Patoka Bridges Historic District was considered as one means to reduce the visual and auditory effects on the District, however, because of the narrowness of the approved corridor at this location (only 420 ft), the alignment could be shifted only slightly, with no perceptible effect on the noise levels and no substantial reduction of the visual effects on the District. Reducing the median width between the two bridges to move the structure carrying the northbound lanes further from the District was also investigated, but this was also found to have a negligible effect on projected noise levels. Shifting the alignment completely beyond the approved Tier 1 approved corridor to the point where it would approach the nearest property already acquired by the Refuge, and thus protected by Section 4(f), was also evaluated. This alignment was found to have increased floodplain and wetland impacts above the alignment within the approved corridor. However, it was determined that a small increase in height of the crash barriers (which are a standard bridge element) would provide an appreciable reduction in projected noise levels in the District. Appendix O, *Patoka Bridges Historic District Technical Memorandum,* contains details of all avoidance and mitigation measures which were evaluated with regard to noise and visual impacts on the District. Also, the SHPO included additional vegetative screening in their recommendations of preferred conceptual mitigation measures. During the design phase, further consideration will be given, in coordination with the National Wildlife Refuge and the SHPO, to planting of trees that will, in the long term, provide some visual screening of the new structures.

4. Context-Sensitive Solutions. These efforts will include coordination with managers of the Patoka River National Wildlife Refuge to identify possible measures that can be taken to plant more trees between the proposed highway bridge structures and the district in order to provide a greater visual screen and to partially abate highway traffic noise. Because

of its height above existing ground at that location – approaching 40 feet – it will not be possible to screen with plantings in the near term.

5. Noise Abatement. At the point that the I-69 alignment is nearest to the District boundary, it is on a structure crossing the Patoka River and associated floodplain, at elevations of at least 40 feet above existing ground. As noted above, it was determined that a small modification to the bridge's crash barriers would substantially reduce noise levels at the District. Additional details of the various measures investigated to reduce noise levels on the District are provided in Appendix O, *Measures to Minimize Harm - Patoka Bridges Historic District.*

B. Preservation and Enhancement – Consulting parties have discussed the possibility of seeking additional funding for local maintenance and preservation of the two steel truss bridges in the District. In their letter of May 11, 2006, the SHPO offered their preferred conceptual mitigation ideas, which included making funding available to the Pike County Commissioners for repairs to bridges #246 and #81 and not allowing construction traffic to use these two bridges. In a coordination meeting with the SHPO on September 23, 2008, INDOT and FHWA have agreed to prohibit construction traffic from using the two historic bridges. The suggestion regarding additional funding for local maintenance and preservation of the two bridges will be pursued prior to the completion of the Final EIS.

C. Education and Interpretation – The Section 106 consulting parties noted that signage about the Patoka Bridges Historic District could be considered as possible mitigation, and suggested that this measure be pursued. Suggested themes for interpretation and education may include the Underground Railroad, the Wabash & Erie Canal, Dongola, bridge engineering, and ditching, which could all be developed for exhibits, brochures, and/or school curricula.

D. Technical Support for Section 106 Activities

1. GIS Capability. INDOT and FHWA will assist the SHPO to develop its GIS capability to facilitate Tier 2 consultation and to support historic preservation reviews for other transportation projects in Southwest Indiana.

2. Interim Reports. INDOT and FHWA will provide funding and technical assistance to support a comprehensive effort to update the Interim Reports for Gibson, Pike, and Daviess Counties.

3. Archaeology. INDOT and FHWA will provide financial and technical assistance to the SHPO for the further development of GIS-based tools for identifying and recording archaeological sites.

The SHPO and INDOT have agreed upon a plan for support of the GIS capability and for the implementation of the Interim Reports. Together with FHWA, they are preparing a Memorandum of Understanding (MOU) that will fund these endeavors.

7.3.6 Visual Impacts

Other than the major river crossings of the Patoka River and the East Fork of the White River, there are no significant landforms in Section 2. The view from the road consists of primarily agricultural and rural landscapes occasionally broken up by densely wooded areas, forest remnants, and streams or drainage ditches. The wooded and agricultural lowland areas surrounding the Patoka River and East Fork of the White River will also be visible from the road. During the growing season, corn and soybean fields constitute the major viewshed, with some scattered residential and commercial development. The following measures will be utilized to address impacts on visual resources:

1. **Design Elements**—Mitigation measures may include vegetative screening at the Patoka Bridges Historic District. Section 7.3.5 describes measures to reduce visual impacts on the District.

2. **Context Sensitive Solutions**—Efforts will be made in this project to create positive impacts and reduce negative impacts without compromising traffic operations and safety. Visual and aesthetic resource issues will be addressed in greater detail through INDOT's continuing consultation with the Section 2 CAC and local groups and/or communities during the design phase. Correspondence received from the NPS recommended efforts to ensure commitments are in place to fully incorporate opportunities for design aesthetics. This correspondence can be found in Appendix B, *Agency Coordination Correspondence*.

3. **Roadway Lighting**—At present, roadway lighting is not anticipated on the bridges or any mainline portions of Section 2. Lighting at interchanges will be evaluated, and will be included if warranted for safety reasons. Based on projected traffic volumes, the US 50 interchange would be the most likely to warrant lighting. Consideration will be given during the design phase to using only non-diffuse lighting, as appropriate.

7.3.7 Hazardous Material Impacts

The Section 2 preferred alternative will not affect any IDEM-recorded Active Landfills, Abandoned/Inactive Landfills/Open Dumps, Active Permitted Solid Waste sites, Industrial Waste sites, Commissioner's State List Cleanup sites, Voluntary Remediation sites, EPA-recorded CERCLA sites, registered underground storage tanks (UST's), leaking underground storage tank's (LUST's), or TRI sites. The following measure will be used to address impacts related to hazardous materials:

1. **Hazardous Material Cleanup**-Appropriate cleanup of hazardous materials and/or removal of underground storage tanks (USTs) and aboveground storage tanks (ASTs) may be required if a contaminated site is purchased. INDOT will coordinate with the

appropriate agencies and property owners to ensure that proper cleanup of any contaminated sites are completed.

2. **Relocating Pipelines Transporting Hazardous Material-**Where construction would require the removal / relocation of buried fuel (oil, natural gas, and diesel) pipelines, coordination will occur with pipeline owners, per INDOT's *Standard Specifications*. Also, stipulations in the *Standard Specifications* will be followed to ensure safe removal / relocation of the pipelines and associated appurtenances, and appropriate remediation of soils and groundwater impacts, should such be necessary. In addition, the procedure will include advance notification of IDEM regarding the potential for contamination of groundwater and need for remediation.

3. **Discovery of Improperly Abandoned Wells-** INDOT will be responsible for proper closing of any improperly abandoned well discovered during construction within the project right-of-way, according to INDOT Standard Operating Procedures for closing wells that are to be abandoned. In addition, the procedure will include advance notification of IDEM regarding the potential for contamination of groundwater and need for remediation.

7.3.8 Floodplain Impacts

There are two major floodplains crossed in Section 2, the Patoka River and the East Fork of the White River. Mitigation measures will also be incorporated for the floodplain at the Flat Creek crossing, although it is not listed as a FEMA 100-year floodplain. A final hydraulic design study will be completed during the design phase, and a summary of this will be included with the Field Check Plans and Design Summary. The following measure will be utilized to address impacts on floodplains:

1. **Encroachments** - Longitudinal and transverse floodplain encroachments will be minimized, where reasonable, through design practices such as longer bridges and perpendicular stream crossings. The crossings at both the Patoka River and the East Fork of the White River are transverse crossings. The entire floodplains of both the Patoka River and Flat Creek will be bridged, based on commitments made in the Tier 1 FEIS.

7.3.9 Wetland Impacts

There are approximately 22 acres of emergent wetlands, 43 acres of scrub/shrub, 248 acres of forested wetlands, and 4 acres of aquatic bed within the Section 2 corridor. The major wetland areas included within these totals include wetlands associated with the Patoka River, Flat Creek, Pride's Creek, Veale Creek, and the East Fork of the White River. Twenty-six wetland community types in a total of 18 wetland complexes are within the right-of-way of the preferred alternative (see Section 5.19.2, *Surface Waters)*. These include 0.79 acres of aquatic bed wetlands, 4.49 acres of emergent wetlands, 0.55 acres of scrub/shrub wetlands, and 21.63 acres of forested wetlands, for a total of 27.46 acres.

The *Draft Wetland Assessment Report* (See Appendix J) identified 16 of the wetland complexes impacted by the preferred alternative as "waters of the U.S.," and therefore under the jurisdiction of USACE and IDEM; and the remaining two as "waters of the state" (isolated), under the jurisdiction of IDEM. Early alternative alignment studies were directed to avoiding wetlands to the greatest extent practical. Commitments to bridge the entire floodplains at the Patoka River and at Flat Creek avoided substantial wetland impacts. In addition, careful shifting of alternative alignments within the corridor in the Pride's Creek and Veale Creek areas further minimized impacts to wetlands. The following measures will be utilized to address impacts on wetlands:

1. **Additional Avoidance and Minimization—**Wetlands and wetland complexes will continue to be avoided as much as possible. If unable to be avoided completely, wetland impacts will be minimized by shifts in the alignment. INDOT and FHWA are committed to mitigating for unavoidable wetland losses. Wetlands outside the actual footprint of the project will be protected from secondary construction impacts.

2. **Wetland MOU—**Wetlands determined to be "waters of the U.S." will be replaced in accordance with the MOU between INDOT, USFWS, and IDNR as dated January 28, 1991, or any successor agreement entered into by these agencies. While not signatory to the agreement, USACE typically follows the mitigation ratios within the MOU. Under the 1991 MOU, wetlands would be mitigated as follows:

    - Farmed wetlands at a ratio of 1 to 1
    - Scrub/shrub and palustrine/lacustrine emergent at a ratio of 2-3 to 1, depending upon quality
    - Bottomland hardwood forest at a ratio of 3-4 to 1, depending upon quality. Within Section 2, none of the forested wetlands were rated as "Good" in all three wetland categories - habitat, botanical, and hydrologic - and mitigation is anticipated to be at a 3:1 ratio within Section 2
    - Exceptional, unique, critical (i.e. cypress swamps) at a ratio of 4 and above to 1 depending upon quality (no wetlands of this type were found within Section 2)

    The identification of wetlands as "waters of the U.S." was based on definitions and guidance found in 33 CFR 328.3, Corps Regulatory Guidance Letters and the wetland delineation manual, and field observations performed as part of the Indiana Wetland Rapid Assessment Protocol (InWRAP) evaluation. USACE and IDEM will make the final determinations regarding the jurisdictional status of wetlands. Based on the range of mitigation ratios identified above, and the quality of the impacted wetlands within Section 2, mitigation for wetland impacts by the preferred alternative is estimated to be approximately 77 acres. The precise amount of mitigation that will be required will be determined during the permitting process.

3. **Conceptual Forest and Wetland Mitigation and Enhancement Plan—**The *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan* (See Appendix P) identifies the general location of potential mitigation sites for the design and

construction of wetlands and upland forest. For Section 2, the primary sites include the Patoka River (located along or near the Patoka River National Wildlife Refuge), Flat Creek, East Fork of the White River, and Veale Creek. (See "Wetland Mitigation" and "Forest Mitigation," Section 7.2 for a description of these sites.) These sites have been identified for further consideration in the future. Other areas may also be identified.

4. **Wetland Pooling—**If appropriate, wetland mitigation may include wetland pooling. Wetland pooling is an effort to build one large wetland mitigation site to mitigate for a number of smaller impacts from potentially a number of projects typically in the same watershed. This typically results in a much more functional and valuable replacement wetland.

5. **Wetland Mitigation and Monitoring Plans—**As determined during Section 404 permitting, Wetland Mitigation and Monitoring Plans will be prepared.

6. **Spraying of Herbicides—**To prevent herbicides from entering wetland areas, "Do Not Spray" signs will be posted as appropriate in the right-of-way.

7.3.10 Farmland Impacts

The primary land use in Section 2 is farmland (almost 75%). The following measures will be used to address impacts on farmland:

1. **Existing Property Lines—**Where reasonable, the preferred alternative follows existing property lines and minimizes dividing or splitting large tracts of farmland to reduce the creation of point rows and uneconomic remnants.

2. **Farmland Access—**Many farm parcels that would have lost access as a result of the project will be provided access via new roads as features of the project. Where providing access was not deemed reasonable from an economic standpoint (i.e. it would cost more to provide new access than to acquire the landlocked property), the disposition of landlocked parcels and uneconomic remnants will be addressed during final design. In several locations, overpasses will be provided to maintain the connectivity of local roads. The overpasses would facilitate access to farm operations divided by I-69.

3. **Farmland Protection—**The NRCS has been contacted and appropriate analyses has been conducted in accordance with the Farmland Protection Policy Act for Section 2. In addition, coordination will continue with the NRCS in Section 2 to determine the feasibility of participating in the Farm and Ranch Lands Protection Program (formerly known as the Farmland Protection Program).

4. **I-69 Community Planning Program—**INDOT and FHWA have provided funding for the I-69 Community Planning Program to allow local jurisdictions to develop local and regional farmland protection strategies.

7.3.11 Forest Impacts

Forests are, for the most part, woodlots in Section 2. Approximately 213 upland forested acres would be directly impacted by the preferred alternative. (Mitigation for forested wetlands is addressed in the discussion of wetland impacts, above.) The following measures will be utilized to address impacts on upland forests:

1. **Forest Mitigation Ratio—**Upland forest impacts will be mitigated at a ratio of 3 to 1 for the I-69 Evansville-to-Indianapolis project as a whole, through the preservation and/or replacement of forested lands within Southwest Indiana. Mitigation goals are to replace direct forest impacts at a 1 to 1 ratio and provide an additional 2 to 1 ratio of forest preservation. All forest mitigation lands will be protected in perpetuity by conservation easements. It is anticipated that all of the mitigation for forest impacts in Section 2 will be located within the Section 2 Study Area (See item #2, below). However, forest mitigation is being developed on a project-wide basis, and may include large tracts that serve as mitigation for multiple Tier 2 sections. The 3 to 1 mitigation ratio may not necessarily be provided within each Tier 2 section; however, the total mitigation for all forest impacts will be 3 to 1. For purposes of discussing the potential mitigation requirements for forest impacts in Section 2 in this DEIS, the 3 to 1 ratio has been used. Using this ratio, mitigation for the forest impacts as a result of the preferred alternative for Section 2 would result in 639 acres of upland forest mitigation (213 acres of replacement and 426 acres of preservation).

2. **Forest Mitigation—**INDOT will consult with appropriate resource agencies regarding forest mitigation measures. Potential forest mitigation sites are identified in the *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan*. The plan provides a list of possible replacement sites. For Section 2, the primary sites include the Patoka River, Flat Creek, East Fork of the White River, and Veale Creek. (See "Wetland Mitigation" and "Forest Mitigation," Section 7.2 for a description of these sites.) Other areas may also be identified.

3. **Riparian Forest Mitigation**—Riparian impacts were calculated by identifying plant communities within 100 feet of a stream. If these riparian forests are identified as wetland forests, the impacts will be mitigated according to the Wetland MOU. If the riparian forests are identified as non-wetland forests in a floodway, impacts will be mitigated according to IDNR ratios: 2 to 1 replanting or 10 to 1 preservation. Impacts to non-wetland riparian areas that are not in a floodway will be mitigated at a ratio of 1 to 1 on a linear feet basis in consultation with IDEM and USACE. All non-wetland riparian forest replacement will be included as part of the 3 to 1 upland forest mitigation. Within Section 2, streams in upland areas generally have wide forested riparian zones, while those in lowlands typically become narrower or non-existent as agricultural land uses encroach. The preferred alternative is estimated to impact a total of approximately 65 acres of non-wetland riparian habitat. Of this total, approximately 47 acres have been identified as forested, and are already included in the totals for forest mitigation. The remaining 18 acres, identified as other riparian areas, include areas with trees but do not meet the definition of "forest". These areas will be mitigated as described in this

paragraph. The total length of stream impacts for the preferred alternative is estimated to be 38,963 linear feet.

7.3.12 Water Body Modifications Impacts

The preferred alternative crosses 77 streams and drainage ditches, including 19 perennial streams, 34 intermittent streams, and 24 ephemeral streams. Some of these streams will be crossed more than once. The majority of streams in Section 2 are disturbed from agricultural drainage and farming practices and some are now simply ditches, while a number of the streams have been previously disturbed physically by past strip mining and chemically impacted by acid mine drainage from the extensive coal mining that has occurred previously, particularly within Gibson and Pike Counties. Within Gibson County, four of the streams are classified as regulated drains (also known as legal drains). Pike County does not maintain records of regulated drains, and Daviess County records indicate there are no regulated drains crossing the Section 2 corridor. The total length of streams within the construction limits of the preferred alternative is approximately 38,963 linear feet. In addition, the preferred alternative will impact 19 ponds. The total impact to these ponds is approximately 3.83 acres. The following measures will be utilized to address impacts on water bodies:

1. **Signage—**Water bodies, wetlands and other natural areas outside the construction limits but within the right-of-way will be delineated and posted with "Do Not Disturb" signs.

2. **Tree Clearing—**Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits and calendar requirements. In the median, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable if it is sufficiently outside any clear zone requirements.

3. **Stream Relocations—**The realignment of surface streams or impacts to riffle-pool complexes and natural stream geomorphology will be avoided where reasonable. In instances where this is not possible, stream impacts will be minimized and mitigated. Stream relocations will be completed using the natural channel design features that are identified through coordination with IDNR to develop a channel that is as good as or better than the impacted channel considering, also, a channel's status as a legal drain.

   Other details of mitigation will be coordinated with the agencies with jurisdiction during the permitting process- USACE and IDEM. In addition, INDOT will coordinate with IDEM, IDNR, and USACE to take into account any recent stream stabilization projects.

4. **Below-water Work—**Where reasonable, below-water work will be restricted to placement of piers, pilings and/or footings, shaping of spill slopes around the bridge abutments, and placement of riprap.

5. **Channel Work—**Where reasonable, channel work and vegetation clearing shall be restricted to within the width of the normal approach road right-of-way.

6. **Artificial Bank Stabilization—**The extent of artificial bank stabilization will be minimized. Soil bioengineering techniques for bank stabilization will be considered where situations allow.

7. **Riprap—**If riprap is utilized for bank stabilization, it shall be of appropriate size and extend below the low-water elevation to provide for aquatic habitat.

8. **Culverts—**Culverts and other devices will be placed so that they do not preclude the movement of fish and other aquatic organisms. Culverts and other devices will be used to preserve existing drainage patterns. Consideration will be given to oversized culverts to allow for the passage of small fauna at locations where it is determined to be appropriate and reasonable, and natural bottoms will be preserved when feasible. Current preliminary designs for bridges at Flat Creek, Pride's Creek, Mud Creek and Veale Creek provide openings that are sufficiently large to allow deer and other wildlife to utilize them for crossing under the new highway. In addition, the Patoka River and the East Fork of the White River will be bridged, allowing free movement of wildlife.

9. **Erosion Control—**Erosion control devices such as erosion control matting, grading, seeding and sodding shall be used to minimize sediment and debris in tributaries of the project.

10. **Crossing of East Fork of White River—**Correspondence received from the National Park Service (NPS) on February 6, 2007 offers recommendations to assist in the mitigation of impacts to the East Fork of the White River. These recommendations include avoiding the placement of piers in the bed or banks of the river (fully span the river), redirect deck run-off away from the river to settling ponds or other filtration system, ensure commitments are in place to fully incorporate opportunities for design aesthetics, and ensure all best management practices are in place to contain erosion, sedimentation, fuels/hydraulic fluids/oil spills, or other such materials. This correspondence can be found in Appendix B, *Agency Coordination Correspondence*.

7.3.13 Ecosystems Impacts

Section 2 crosses the Patoka River Bottoms within the Patoka River National Wildlife Refuge boundary and also crosses the East Fork of the White River. Both are considered to be significant ecosystems. The following measures will be utilized to address impacts on ecosystems:

1. **Do Not Spray or Mow—**Where woody vegetation, wetlands, wildflowers or environmentally sensitive areas occur, "Do Not Spray or Mow" signs will be posted.

2. **Invasive Plant Species—**INDOT is a member of the Invasive Plant Species Assessment Group, and as a member, develops recommendations for selling and planting plant species in the state. In mitigation sites and within the proposed right-of-way for I-69, INDOT will use appropriate herbicides and/or physical mechanisms to control invasive plants, such as purple loosestrife, canary reed grass, kudzu, Japanese knotweed and others.

3. **Migratory Bird Treaty Act—**Coordination with the USFWS will continue pursuant to the Migratory Bird Treaty Act of 1918.

4. **Conservation Measures for Wildlife—**Transportation designers will work with appropriate agencies to determine the most feasible and practical conservation measures for the maintenance of wildlife movements and landscape connectivity.

5. **Mitigation Measures for Wildlife—** Mitigation measures for impacts on wildlife movements and populations are proposed to include wildlife crossings at four locations: the Patoka River crossing, the Flat Creek crossing, the crossing of the East Fork of the White River, and the crossing of the tributary to Jackson Pond. In each case, the structures proposed to carry I-69 over these features will provide a wildlife crossing corridor well in excess of the minimum dimensions required to allow large mammals to pass (at least 8' by 24'). At the Patoka River, the total structure length will be in excess of 4,400 feet. Following construction of the bridges, all areas within the Patoka River floodplain disturbed by construction will be restored to original contours.

   During the design phase, consideration will be given to planting plans that will provide adequate cover for wildlife to access these crossings from adjacent areas of cover. Fencing to funnel wildlife toward these crossings will also be evaluated during design.

   Additional opportunities for wildlife to cross will occur at Prides Creek, Mud Creek and Veale Creek. As presently proposed, the structures over these streams are anticipated to provide sufficient opening beneath them for deer and all smaller mammals, reptiles and amphibians. See Figure 7-4 (pg. 7-41) for an example of a wildlife crossing.

   Other bridges and larger culverts will also provide additional crossing opportunities for smaller wildlife. Crossings of four Flat Creek tributaries, a tributary to Veale Creek, North Woods creek, and a tributary to Hurricane Branch will all provide good crossing opportunities for smaller wildlife. Natural bottoms for the box culverts will be used for these crossings where feasible.

   During the design phase, detailed consideration will be given to the following features:

   - Barrier fencing (large species)
   - All wildlife crossing types will be determined and designed considering size, placement, substrate, vegetative cover, moisture, temperature, light, and human disturbance.
   - Roadway warning signs and flashers.
   - Bat-friendly bridges.
   - Planting of unpalatable plant species near roadways to reduce the likelihood of wildlife attraction

7.3.14 Water Quality Impacts

Water quality in the streams crossed by the preferred alternative is generally of lower quality. Many of the streams are ditches used to remove water from agricultural parcels and four in Gibson County are classified as legal drains. They are routinely dredged to remove siltation. The following measures will be utilized to address impacts on water quality:

1. **Stream Crossings—**Where reasonable, the preferred alternative will cross rivers and streams at their narrowest floodway width, and reduce the number of stream relocations and floodplain encroachments.

2. **Stream Mitigation Plans—**Develop stream mitigation plans where necessary.

3. **Disturbed In-Stream Habitats—**Return disturbed in stream habitats to their original condition, when possible, upon completion of construction in the area.

4. **Tree Clearing—**Minimize tree clearing and snag removal near streams. [Note: Providing approximately 20 feet of cleared space near bridges is needed to allow sufficient room for bridge maintenance and inspection.]

5. **Wetlands—**Avoid wetlands as much as possible and follow the Wetland Memorandum of Understanding (MOU) dated January 28, 1991 between INDOT, IDNR, and USFWS. Replace all wetlands at the appropriate mitigation ratio as identified in the Wetland MOU.

6. **Erosion Control—**Follow Best Management Practices (BMPs) for erosion control in the project.

7. **Roadside Drainage—**Where appropriate, construct roadside ditches that are grass-lined and connected to filter strips and containment basins.

8. **Spill Prevention/Containment—**Include in roadway design appropriate measures for spill prevention/containment. During construction of I-69, any spill incidents on site will be handled in accordance with INDOT spill response protocol as outlined in their Construction Activity Environmental Manual and Field Operations Manual Procedure 20. The Rule 5 permit that contractors must obtain will require that each contractor have spill containment plans in their contract documents.

9. **Road Salt Spray and Salt Runoff—**Make every effort to minimize the amount of salt used on the bridges and roads. Use alternative substances or low salt (e.g., sand) as much as possible. INDOT's Standard Operating Procedures for applying deicing chemicals to roadways and bridges, including the mixture composition of these deicing materials, is included in Appendix R.

7.3.15 Threatened and Endangered Species

Eight state-listed or federally-listed or protected species were determined to be present in or use the Patoka River bottomlands: the federally-endangered Indiana bat, the federally protected bald eagle, the state-endangered evening bat, the state-endangered golden-winged warbler, the state

special-concern cerulean warbler, the state special-concern black and white warbler, the state special-concern hooded warbler and the state-endangered copperbelly water snake. No state-listed or federally-listed mollusks, crustaceans, or fishes were detected during Section 2 field studies.

See Chapter 5.17 for more information regarding the Indiana bat surveys that were completed in Section 2.

The following conservation measures will be utilized to address impacts to federal threatened and endangered species. They were developed by INDOT and FHWA with the assistance of USFWS as part of the Section 7 consultation process. These measures have been incorporated into USFWS's Tier 1 revised Biological Opinion (BO) for the project (See Appendix L). The conservation measures listed below address both the Indiana bat and the bald eagle.[6] It should be noted that only those portions of the text having some applicability to Section 2 are cited below. Where clarification or specific information about conditions in Section 2 warrants, the text is placed in parentheses, indicating it was not included in the revised BO.

Studies conducted in accordance with the Tier 1 revised BO have determined that the project in Section 2 has the potential to affect only the summer habitat of the Indiana bat. Accordingly, the mitigation measures cited here address only impacts to Indiana bat summer habitat. In other I-69 Tier 2 sections that have potential impacts upon winter and autumn/summer habitat, additional mitigation measures will be proposed.

It should be noted that a revised Incidental Take Statement[7] has been included at the end of the revised Tier 1 BO (see Appendix L) with its non-discretionary Reasonable and Prudent Measures and associated Terms and Conditions to further minimize the incidental take of Indiana bats. A Section-specific Tier 2 BO for Section 2 will be issued by the USFWS once the Section 2 Tier 2 Biological Assessment (BA) has been submitted and reviewed.

INDIANA BAT (*Myotis sodalis*)

A. CONTEXT SENSITIVE SOLUTIONS

SUMMER HABITAT

1. **Alignment Planning –** Efforts will be made to locate Interstate alignments so they avoid transecting forested areas and fragmenting core forest where reasonable.
   Status – Efforts have been made to avoid and minimize fragmenting forests.

2. **Tree Removal –** Tree and snag removal will be avoided or minimized as follows:

[6] Unless otherwise noted, the status of the conservation measures cited herein is "To Be Completed."

[7] Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of the Incidental Take Statement.

a. **Tree Cutting –** To avoid any direct take of Indiana bats, no trees with a diameter of 3 or more inches will be removed between April 1 and September 30. Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits. In the median, outside the clear zone, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable. Forested medians will be managed following IDNR State Forest timber management plan.

b. **Mist Netting –** In areas with suitable summer habitat for the Indiana bat, mist net surveys will be conducted between May 15 and August 15 at locations determined in consultation with USFWS as part of Tier 2 studies. If Indiana bats are captured, some will be fitted with radio transmitters and tracked to their diurnal roosts for at least 5 days unless otherwise determined by USFWS.
Status – Completed. A total of 148 mist net sites was surveyed (30 in Section 2) in 2004 and 49 sites (9 in Section 2) were surveyed or resurveyed in 2005. (Note: During the first survey in 2004, a total of 10 Indiana bats were captured. This includes two (2) post-lactating females, seven (7) non-reproductive adult females, and one (1) adult male. Nine (9) Indiana bats were radiotagged and as a result eight (8) roost trees were identified. Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no roost trees were identified in 2004. One (1) Indiana bat was captured in 2005, a non-reproductive female. The non-reproductive female was radiotagged, but could not be successfully tracked to a roost tree.)

3. **Bridges –** Bridges will include the following design features:

a. **Surveys –** The undersides of existing bridges that must be removed for construction of I-69 will be visually surveyed and/or netted to determine their use as night roosts by Indiana bats during the summer.
Status – Completed. A total of 270 bridges and culverts (68 in Section 2) were inspected for Indiana bats. Of the 270 bridges surveyed, Indiana bats were found under one bridge. This bridge is not located in Section 2.

b. **Bat-friendly bridges –** If feasible and appropriate, the Patoka River and East Fork of the White River bridges will be designed to provide suitable night roosts for Indiana bats and other bat species in consultation with USFWS.

c. **Floodplains –** Where reasonable and appropriate, floodplains and oxbows will be bridged to protect environmentally sensitive areas. The Patoka River and Flat Creek floodplains will be bridged in their entirety, thus minimizing impacts to many different habitats.

4. **Stream Relocations –** Site-specific plans for stream relocations will be developed in design considering the needs of sensitive species and environmental concerns. Plans will include the planting of woody and herbaceous vegetation to stabilize the banks.

Such plantings will provide foraging cover for many species. Stream Mitigation and Monitoring plans will be developed for stream relocations, as appropriate.

ALL HABITATS

5. **Medians and Alignments –** Variable-width medians and independent alignments will be used where appropriate to minimize impacts to sensitive and/or significant habitats. Context Sensitive Solutions will be used, where possible. This may involve vertical and horizontal shifts in the Interstate alignment.

6. **Memoranda of Understandings (MOUs) –** Construction will adhere to the Wetland MOU (dated January 28, 1991). The Wetland MOU minimizes impacts to the Indiana bat by mitigating for wetland losses, and creating bat foraging areas at greater ratios than that lost to the project.

7. **Water Quality –** Water contamination will be avoided/minimized by the following:

   a. **Equipment Service –** Equipment servicing and maintenance areas will be designated to areas away from streambeds, sinkholes, or areas draining into sinkholes.

   b. **Equipment Maintenance –** Construction equipment will be maintained in proper mechanical condition.

   c. **Spill Prevention/Containment –** The design for the roadway will include appropriate measures for spill prevention/ containment for drainage into the Patoka River, Flat Creek, East Fork of the White River and Veale Creek.

   d. **Revegetation –** Revegetation of disturbed areas will occur in accordance with INDOT standard specifications. Woody vegetation will only be utilized beyond the clear zone. Revegetation of disturbed soils in the right-of-way and medians will utilize native grasses and wildflowers, as appropriate, similar to the native seed mixes of other nearby states. (INDOT's Roadside Heritage program cultivates native seeds for use along highway rights-of-way.)

   e. **Bridge Design –** Where feasible and appropriate, bridges over Patoka River, Flat Creek, East Fork of the White River and Veale Creek will be designed with none or a minimum number of in-span drains. To the extent possible, the water flow will be directed towards the ends of the bridge and to the riprap drainage turnouts.

8. **Erosion Control –** Temporary erosion control devices will be used to minimize sediment and debris. Timely revegetation after soil disturbance will be implemented and monitored. Revegetation will consider site specific needs for water and (where applicable) karst. Erosion control measures will be put in place as a first step in construction and maintained throughout construction.

9. **Parking and Turning Areas –** Parking and turning areas for heavy equipment will be confined to sites that will minimize soil erosion and tree clearing.

B. RESTORATION / REPLACEMENT

SUMMER HABITAT

1. **Summer Habitat Creation / Enhancement –** Indiana bat summer habitat will be created and enhanced in the Action Area through wetland and forest mitigation focused on riparian corridors and existing forest blocks to provide habitat connectivity. The following areas and possibly others will be investigated for wetland and forest mitigation to create and enhance summer habitat for the Indiana bat: Pigeon Creek, Patoka River bottoms, East Fork of the White River, Thousand Acre Woods, White River (Elnora), First Creek, American Bottoms, Garrison Chapel Valley, Beanblossom Bottoms, White River (Gosport), White River (Blue Bluff), and Bradford Woods.

   In selecting sites for summer habitat creation and enhancement, priority will be given to sites located within a 2.5-mile radius from a recorded capture site or roost tree. If willing sellers cannot be found within these areas, other areas may be used as second choice areas as long as they are within the Action Area and close enough to benefit these maternity colonies, or are outside the Action Area but still deemed acceptable to USFWS.

   Where appropriate, mitigation sites will be planted with a mixture of native trees that is largely comprised of species that have been identified as having relatively high value as potential Indiana bat roost trees. Tree plantings will be monitored for five years after planting to ensure establishment and will be protected in perpetuity via conservation easements.

2. **Wetland MOU –** Wetlands will be mitigated at ratios agreed upon in the Wetland MOU (dated January 28, 1991). Wetland replacement ratios are as follows:

   a. Farmed 1 to 1

   b. Scrub / shrub and palustrine / lacustrine emergent 2 – 3 to 1 depending upon quality

   c. Bottomland hardwood forest 3 – 4 to 1 depending upon quality

   d. Exceptional, unique, critical (i.e. cypress swamps) 4 and above to 1 depending upon quality

3. **Forest Mitigation** – The *Revised Tier 1 Conceptual Forest and Wetlands Mitigation and Enhancement Plan* identifies the general location of potential mitigation sites for upland and bottomland forest. Preference will be given to areas contiguous to large forested tracts that have recorded federal and state listed species. The actual

mitigation sites implemented will be determined in or following Tier 2 in consultation with the Service and other environmental review agencies. Coordination with the environmental review agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. Forest impacts will be mitigated at a ratio of 3 to 1, with a goal of 1 to 1 replacement through reforestation and 2 to 1 for forest preservation. All forest mitigation lands will be protected in perpetuity via conservation easements. The 3 to 1 forest mitigation may not be located entirely within the Action Area. However, forest impacts occurring within the 2.5-mile radius maternity colony areas would be mitigated by replacement (i.e. planting of new forest and purchase of existing) preferably in the vicinity of the known roosting habitat.

Status: Four potential mitigation sites for Section 2: Patoka River, Flat Creek, East Fork of the White River, and Veale Creek. Potential impacts to forests in Section 2 and conceptual mitigation sites are identified above in Section 7.2, *Forest Mitigation.*

C. CONSERVATION / PRESERVATION

SUMMER HABITAT

1. **Summer Habitat** – Investigations will be coordinated with the USFWS on purchasing lands at fair market value in the Action Area from "willing sellers" to preserve summer habitat. Any acquired summer habitat area would be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements.

D. EDUCATION / RESEARCH / MONITORING

SUMMER HABITAT

1. **Mist Netting** – A work plan for surveying, monitoring, and reporting will be developed and conducted in consultation with and approved by USFWS. This mist netting effort will be beyond the Tier 2 sampling requirements. Fifty mist netting sampling sites are anticipated. Monitoring surveys focused at each of the 13 known maternity colonies will be completed the summer before construction begins in a given section and will continue each subsequent summer during the construction phase and for at least five summers after construction has been completed. If Indiana bats are captured, radio transmitters will be used in an attempt to locate roost trees, and multiple emergence counts will be made at each located roost tree. These monitoring efforts will be documented and summarized within an annual report prepared for USFWS.

GENERAL

2. **Educational Poster** – Total funding of $25,000 will be provided for the creation of an educational poster or exhibit and/or other educational outreach media to inform the public about the presence and protection of bats, particularly the Indiana bat.

Funding would be provided after a Notice to Proceed is issued for construction of the first section of the project.

3. **Rest Areas -** Rest areas will be designed with displays to educate the public on the presence and protection of sensitive species and habitats. Attractive displays near picnic areas and buildings will serve to raise public awareness as they utilize the Interstate. Information on the life history of the Indiana bat, protecting karst, and protecting water quality will be included in such displays. No rest area is planned within Section 2.

4. **Access to Patoka NWR -** At this time, the two proposed interchanges nearest the Patoka River National Wildlife Refuge are the SR 64 interchange, located approximately five miles south of the river, just west of Oakland City, and the SR 61/56 interchange at Petersburg, nine miles north of the river. Signage regarding access to the refuge could be made available at the interchanges.

5. **GIS Information** – GIS maps and databases developed and compiled for use in proposed I-69 planning will be made available to the public. This data provides information that can be used to determine suitable habitats, as well as highlight other environmental concerns in local, county, and regional planning. Digital data and on-line maps are being made available from a server accessed on the Indiana Geological Survey (IGS) website at IU http://igs.indiana.edu/arcims/statewide/index.html. In addition, detailed GIS forest data (five-meter resolution) has been developed for the 13 maternity colony foraging areas (circles with 2.5-mile radius) and WAA. This data was developed in order to better determine habitat impacts to the Indiana bat. This is the most accurate and detailed forest data known to exist for those areas. This data could potentially be used by USFWS, other government agencies, or students to examine effects on the Indiana bat, other species, or ecosystems over time.

BALD EAGLE (*Haliaeetus leucocephalus*)

Contact with the USFWS in March of 2008 indicated that there is one known active eagle nest in the vicinity of the Section 2 corridor (Appendix B, *Agency Correspondence*, USFWS, March 31, 2008). The nest is located in Gibson County, approximately 0.85 miles east of SR 57. The I-69 corridor lies more than a mile west of SR 57 at this location, and thus the nest will not be affected by the proposed project.

Most conservation measures for the bald eagle are also measures for the Indiana bat, and have been updated in the Indiana bat Conservation Measures section, described above. The conservation measures for the bald eagle are described in the revised Tier 1 BO, provided in Appendix L.

Regarding the recent change in status of the bald eagle, on July 9, 2007, the USFWS removed the bald eagle from the list of endangered and threatened species under the Endangered Species Act. Since that time, however, the bald eagle has been protected by the Bald and Golden Eagle Protection Act, 16 U.S.C. §§ 668-668d. On May 20, 2008, the USFWS issued regulations governing permits under the Bald and Golden Eagle Protection Act for the

projects that obtained an incidental take permit under the ESA. 50 C.F.R. Part 22. FHWA and INDOT intend to comply, as appropriate, with the Bald and Golden Eagle Protection Act permit requirements established by FWS prior to construction.

7.4 Environmental Mitigation Costs

Environmental mitigation costs for the Section 2 preferred alternative were determined on the following basis and can be found in Table 7-2. The estimated costs are in year 2010 dollars (shown on Table 7-2), and were determined using year 2007 dollars multiplied by an inflation factor (3.5% per year) to account for estimated cost increases over time.

1. **Wetland Mitigation—**The acreage needed for wetland mitigation was determined for each alternative based on the expected impact acreage, type of wetland, and jurisdiction. In Section 2 approximately 0.79 acres of aquatic bed, 0.55 acres of scrub/shrub, 4.49 acres of emergent and 21.63 acres of forested wetlands would be impacted by the preferred alternative. Ratios described in Section 7.3.9, *Wetland Impacts*, were used to estimate the number of acres needed to mitigate impacts to wetlands. Based on those ratios, up to approximately 77 acres could be required for mitigation. (Note: The precise amount of mitigation that will be required will be determined during the permitting process.) The cost of this mitigation, including purchasing suitable parcels, designing and constructing wetlands, as well as administrative costs, was estimated at $33,300 per acre (adjusted for inflation). Therefore, the mitigation cost would be approximately $2,564,100**.**

2. **Forest Mitigation—**The acreage needed for Forest Mitigation was determined for each alternative based on the expected impact acreage. For the I-69 Evansville-to-Indianapolis project as a whole, the acreage needed for mitigation was determined by using a 3:1 ratio (with the goal being 1:1 for reforestation, to replace direct impacts, and 2:1 for preservation of existing forests). The cost of this mitigation, including securing suitable parcels, site design and planting of trees, as well as administrative costs, was estimated at $16,600 per acre (adjusted for inflation). The impact to upland forests as a result of the preferred alternative in Section 2 is approximately 213 acres. (Mitigation of impacts to forested wetlands is discussed in *1. Wetland Mitigation*, above.) Based on the 3 to 1 mitigation ratio for forest meeting USDA definition of “forest”, approximately 639 acres of forest mitigation could be required, at a cost of approximately $10,607,400.

3. **Other Riparian Areas—**Riparian areas refers to non-wetland land located immediately adjacent to streams and lakes. The width of these riparian areas can vary, and is generally wider in the upland areas where topography is more rugged and narrower in the flatter lowlands where agricultural fields use more of the land. (See Section 5.19.2.3, *Analysis*, for further details on riparian areas.) In general, impacts to these riparian areas are expected to be mitigated through the forest mitigation program wherever possible, but in some instances may be treated separately. Of the 65 acres of total riparian area impacted by the preferred alternative, 47 acres are forested (see page 7-27), and will be mitigated under the forest mitigation program, as described immediately above. The remaining 18 acres of impacted other riparian areas are wooded but do not meet the

USDA's technical definition of "forest". These areas are therefore not included in the forest mitigation, but are rather mitigated at the 1:1 ratio for mitigation of other (non-wetland) riparian habitat. At an estimated cost of $16,600 per acre (inflated to Year 2010 prices), the total cost for mitigation of these 18 acres of other riparian areas impacted by the preferred alternative is estimated to be approximately $298,800.

4. **Stream Mitigation—**The acreage needed for stream mitigation was determined based on the expected impact. For this project, the area needed for mitigation was determined by using a 1:1 ratio and applying it to the acreage mitigation required by USACE (14.3 acres) and the linear feet mitigation required by IDEM (38,963 linear feet). The mitigation cost was based on acreage only. Based on a 1:1 ratio and estimated cost of $33,300 per acres (adjusted for inflation) for 14.3 acres, the mitigation cost would be approximately $476,200.

5. **Noise Impact Mitigation—**At this time, no noise barriers or other noise impact mitigation measures are anticipated within Section 2. Although not required, the outside safety barrier on the bridge over the Patoka floodplain may be increased in height to provide some additional noise level reductions at the Patoka Bridges Historic District. A final decision on whether to provide this increased-height barrier will be made in consultation with the SHPO and finalized in a Memorandum of Agreement.

6. **Access Rights—**A value of $2 million was estimated for the entire I-69 project (Evansville to Indianapolis) to represent the approximate cost to obtain access rights to any mitigation sites developed. Section 2 consists of approximately 29 miles of the 142-mile-long freeway, or 20% of the total, for an estimated $400,000. Adjusted for inflation, the cost would be $443,600.

7. **Karst—**Those alternatives passing through karst topography would have a mitigation cost of up to $1 million for mitigation. Section 2 does not cross karst, and no mitigation costs for karst impacts are assumed.

8. **Historic and Archaeological—**A value of up to $5 million was applied to the entire I-69 project to represent potential cost to mitigate historic and archaeological impacts. Section 2 does have a Section 106 historic impact at the Patoka Bridges Historic District and no archaeological impacts are anticipated. As discussed in 5. *Noise Impact Mitigation*, above, consideration will be given to a small increase in the height of the outside barrier on the bridge over the Patoka floodplain in order to reduce noise levels in the Patoka Bridges Historic District. A final decision will be made prior to the FEIS. Section 2 is within Gibson County, Pike County, and Daviess County. These counties require Interim reports. The project will fund these Interim reports. Prorating the $5 million mitigation cost by the proportion of the entire project's length that is in Section 2 (20%) and adjusting for inflation shows an estimated cost of $1,109,000 attributable to Section 2.

9. **Community Planning Program**—A uniform value of up to $2 million was allocated for planning grants for local governments to use for setting up comprehensive plans to aid in planned development likely to occur at or near interchanges. Each eligible

county/community could receive up to $50,000. In Section 2, Daviess County and the City of Washington jointly have received a grant of $100,000, as have Pike County and the City of Petersburg. Gibson County has also received a $50,000 grant, bringing the total program cost within Section 2 to $250,000 (no adjustment for inflation).

10. **Contingency—**In the Tier 1 FEIS, a contingency of $15 million was applied to all alternatives for other mitigation that might be needed as a result of the Tier 2 studies and subsequent design. Section 2 is approximately 29 miles of the 142-mile-long freeway or 20% of the total, which equates to approximately $3,000,000. For Tier 2, the contingency has been estimated as an additional 20% of the subtotal of the specific line items, as discussed in Appendix C. The Tier 2 mitigation contingency is therefore estimated as $3,149,800.

The total estimated mitigation cost for the Section 2 preferred alternative, including the 20% contingency allowance, is $18,898,900 in Year 2010 dollars.

Table 7-2: Mitigation Cost Estimates for Section 2 Preferred Alternative, Year 2010

Criteria		Estimated Cost (Rounded)
Wetland Mitigation**:**	77 acres x $33,300 (i.e., $30,000 x 1.109**)	$2,564,100
Forest Mitigation:	639 ac x $16,600 (i.e., $15,000 x 1.109**)	$10,607,400
Riparian (non-wetland) Mitigation:	18 acre x $16,600 (i.e., $15,000 x 1.109**	$298,800
Stream Mitigation:	14.3 ac x $33,300 (i.e., $30,000 x 1.109**)	$476,200
Noise Mitigation:		No noise barriers anticipated.
Access Rights:	$400,000* x 1.109**	$443,600
Karst:		No karst mitigation is needed.
Historic and Archaeological:	$1,000,000* x 1.109**	$1, 109,000
Community Planning :	$250,000	$250,000
	Subtotal	$15,749,100
Contingency:	20% of subtotal	$3,149,800
	Total, Year 2010 Dollars	**$18,898,900**

*** Year 2007 dollars x multiplier to account for inflation = 2010 dollars. Inflation multiplier is 1.109 (3.5% per year for 3 years)*

Figure 7-1: Wetland Before Construction

Figure 7-2: Wetland During Construction

Figure 7-3: Wetland During Monitoring Stage

Figure 7-4: Example of Wildlife Crossing Under Highway

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