5.13 Historic Resource Impacts

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

Since the DEIS, the following substantive changes have been made to this section:

- **Section 5.13.2.1**, *Consultation Process* – Updated consultation activities timeline and narrative to include National Register of Historic Places (NRHP) listing removal of the Hastings Schoolhouse; consultation with the State Historic Preservation Officer (SHPO) regarding the DEIS for Preferred Alternative 8; publication of the DEIS; completion of the Phase Ia and Ib Archaeological surveys; and to include all consultation activities since publication of the DEIS, especially the consultation on the Memorandum of Agreement (MOA) and with the Advisory Council on Historic Preservation (ACHP).

- **Section 5.13.2.1**, *Consultation Process* – Updated Identification of Consulting Parties section to include new representatives of Consulting Party organizations.

- **Section 5.13.2.1**, *Consultation Process* – Added information regarding a Fifth Consulting Party Meeting.

- **Section 5.13.2.1**, *Consultation Process* – Added information regarding consultation with the ACHP, including the ACHP's response to the invitation to join in consultation; field review held with SHPO and ACHP; meeting held with ACHP, SHPO, and consulting parties; and additional consultation regarding the MOA.

- **Section 5.13.2.9**, *Hardship Acquisitions* – Updated information regarding the status of the Smith Property under Hardship Acquisitions.

- **Section 5.13.5**, *Resolution of Adverse Effects – Mitigation* – Updated to include new stipulations to MOA resulting from consultation with SHPO, consulting parties, and the ACHP and the date of signature for the MOA.

- **Section 5.13.6**, *Summary* – Updated to include the MOA.

5.13.1 Introduction

All evaluations of historic properties were conducted in accordance with Section 106, National Historic Preservation Act (NHPA) of 1966, as amended, 36 CFR Part 800 (2010).

According to the NHPA, "the historical and cultural foundations of the Nation should be preserved as part of our community life and development in order to give a sense of orientation

to the American people" (16 U.S.C. §470(b)(2)). Further, the federal government has the responsibility "to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony" (16 U.S.C. §470-1(1)). Section 106 of the NHPA requires federal agencies "to take into account the effect of the undertaking" (the project) upon historic properties (16 U.S.C. §470(f)). This requires the agency to make a "reasonable and good faith effort" to identify and evaluate historic properties and then to document the project's effects upon these historic properties (36 CFR §800.4(b)(1)).

The following information documents the process by which the Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT) initiated Section 106 consultation, identified and evaluated historic properties, assessed the effects of the undertaking upon historic properties, and mitigated any adverse effects of the undertaking upon historic properties.

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. Analysis of impacts to cultural resources in Section 5 takes into consideration that a major transportation facility with high traffic levels already is centrally located within the Area of Potential Effects (APE) for this project. Where historic resources are located in proximity to the existing roadway (Maple Grove Road Rural Historic District, North Clear Creek Historic Landscape District, Hunter Valley Historic Landscape District, and Monroe County Bridge No. 913, for example), the impacts of upgrading the existing roadway were weighed against existing conditions. For more information on how the existing roadway factored into the analysis of effects on resources, see **Appendix N**, *Section 106 Documentation,* for a copy of the *Identification of Effects Report.*

This section focuses only on historic (aboveground) resources. **Section 5.14**, *Archaeology Impacts*, discusses archaeological resources, which also fall within the requirements of the NHPA. Consultation regarding both historic (aboveground) and archaeological resources is documented in this section.

5.13.2 Methodology

All work described in this chapter was conducted by qualified professionals who meet the standards set forth by the U.S. Department of the Interior in 36 CFR Parts 61 and 68 and the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716).

The section on methodology is divided into the following sections: 1) consultation process, 2) Area of Potential Effects (APE), 3) research, and 4) fieldwork.

5.13.2.1 Consultation Process

According to 36 CFR §800.16(f), consultation is "the process of seeking, discussing, and considering the view of other participants, and, where feasible, seeking agreement with them

regarding matters arising in the section 106 process." Consulting parties can include: the ACHP; SHPO; Native American tribes; representatives of local governments; applicants for federal assistance, permits, licenses, and other approvals; and other interested parties. For the State of Indiana, the Director of the Department of Natural Resources (IDNR), Division of Historic Preservation and Archaeology (DHPA), has been designated as the Deputy SHPO. Members of his or her staff in the DHPA typically are involved in the consultation. Pursuant to 36 CFR §800.2(c)(5) additional consulting parties are defined as those "with a demonstrated interest in the undertaking … due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties."

Timeline of Consultation

Significant activities in the consultation process for Section 5 are detailed below.

May 18, 2004 FHWA sent a letter and response card to potential consulting parties, including thirteen Native American Tribes, inviting them to participate as consulting parties for Tier 2. The letter directed invitees to the ACHP website to obtain more information about the Section 106 process.

May-June 2004 FHWA received postcard responses from prospective consulting parties.

June 23, 2004 Map of the Section 5 APE was sent to the SHPO for review.

June 25, 2004 Invitations sent to responding consulting parties having an identified interest in the Section 5 project area notifying them of the first scheduled Section 5 consulting party meeting. A map of the APE and a list of potentially eligible properties identified in the Tier 1 study were included with each invitation.

July 1, 2004 Section 5 Project Office held a general open house, at which visitors were advised of the Section 106 process and encouraged to take a copy of the booklet, "Protecting Historic Properties – A Citizen's Guide to Section 106 Review."

July 7, 2004 SHPO provided feedback on the proposed APE and requested some modifications.

July 13, 2004 First consulting party meeting held in the Section 5 Project Office.

August 12, 2004 Minutes of first consulting party meeting mailed to consulting parties.

August 12, 2004 Tier 2 coordination continued with the SHPO: SHPO representative(s) attended the first Tier 2 environmental resource agency coordination meeting, to which representatives of all Tier 2 project sections and participating government agencies were invited.

December 8, 2004 Letter sent to the DHPA/SHPO requesting the de-listing of the Hastings Schoolhouse in Monroe County (demolished due to tornado damage).

January 28, 2005 National Register Weekly List 01/28/2005, email, including announcements and actions on properties for the NRHP, indicated the Hastings Schoolhouse had been removed from the NRHP as of June 1, 2004.

February 7, 2005 Meeting held with the state archaeologist at SHPO to define what constitutes aboveground versus archaeological resources as related to limestone quarries.

February 9, 2005 Additional information regarding APE sent to SHPO.

February 15, 2005 Meeting held with SHPO staff. Discussion items included integrity as it pertains to limestone-related resources and the formatting of the draft Historic Property Report (HPR).

Feb. 23-24, 2005 Coordination with the SHPO continued via the second environmental resource agency coordination meeting attended by all Tier 2 project sections.

May 25, 2005 SHPO sent letter concurring with the APE.

May 27, 2005 Consultation occurred with SHPO during a field trip to selected resources, including the Fullerton House and Vernia Mill site within the Section 5 APE.

June 9, 2005 FHWA invited consulting parties to attend the second consulting party meeting to discuss Findings of Eligibility. Materials provided to consulting parties along with the invitation included an executive summary of the draft HPR, descriptions of eligible properties, a table listing all surveyed properties rated Contributing or higher, and a map showing the location of the Section 5 project office. Consulting parties informed that the draft HPR was available for review at the Section 4, Section 5, and Section 6 project offices.

June 9, 2005 Draft HPR documenting the methodology and findings of eligibility as part of the Section 106 process for the Section 5 Tier 2 Study sent to SHPO.

June 27, 2005 Second consulting party meeting held at the Section 5 Project Office.

July 14, 2005 Project Management Consultant (PMC) requested concurrence from SHPO regarding the NRHP eligibility of Morgan County Bridge No. 224.

July 15, 2005 Minutes of second consulting party meeting mailed to consulting parties.

August 1, 2005 SHPO responded to the draft HPR with suggestions and points of clarification.

August 16, 2005 SHPO concurred with the NRHP eligible status of Morgan County Bridge No. 224.

August 25, 2005 Response sent to SHPO addressing questions and clarifying issues raised in the August 1, 2005, letter on the draft HPR.

November 11, 2005 PMC letter to Christie Kiefer at the Division of Water, Environmental Unit, IDNR regarding Purpose and Need submission.

December 1, 2005 SHPO coordination meeting held to discuss the cemeteries, I-69 schedule, Phase Ia cultural management summaries, and status of the Phase Ic and II work plans.

December 16, 2005 SHPO sent letter regarding the Purpose and Need submission, which it received from IDNR on November 23, 2005.

January 9, 2006 SHPO field review held to assess preliminary project effects on historic resources and cemeteries; members also viewed the Daniel J. and Nancy M. Stout property.

February 6, 2006 Draft *Phase Ia Archaeological Investigations Archaeological Records Review* sent to SHPO.

March 13, 2006 SHPO requested additional information and clarification regarding Archaeological Records Review report.

November 15, 2006 Meeting held with SHPO to discuss Alternatives 4 and 5 relative to Monroe County Bridge No. 913 and Morgan County Bridge No. 161, Maple Grove Road Rural Historic District, and Fullerton House Eligibility Evaluation. The description of project alternatives can be found in **Chapter 3**, *Alternatives*.

April 25, 2007 *Report on the Determination of Ineligibility*[1] *of the Fullerton House for Listing in the National Register of Historic Places* transmitted to SHPO for review.

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[1] In its May 25, 2007, letter, SHPO suggested changing the name of the document from *Report on the Determination of Ineligibility of the Fullerton House for Listing in the National Register of Historic Places* to *Report on the Determination of Eligibility of the Fullerton House for Listing in the National Register of Historic Places.* Both names of the report are used throughout this document.

May 25, 2007	SHPO sent letter concurring with the conclusion of the *Report on the Determination of Ineligibility of the Fullerton House for Listing in the National Register of Historic Places* that the Fullerton House is not eligible for the NRHP but suggested revisions before sending it to the Keeper of the National Register (including changing the report name from *Ineligibility* to *Eligibility*).
June 12, 2007	FHWA sent *Report on the Determination of Eligibility of the Fullerton House for Listing in the National Register of Historic Places* to the Keeper of the NRHP.
July 27, 2007	Keeper of the NRHP responded to FHWA's formal request and agreed that the Fullerton House is not eligible for the NRHP.
April 30, 2008	Letter transmitted to SHPO and consulting parties including a copy of the revised HPR for comment and review.
May 30, 2008	SHPO sent letter concurring with the findings of the HPR.
August 19, 2011	Methodology for the Additional Information (AI) survey and APE revisions sent to SHPO.
September 14, 2011	SHPO meeting to discuss the revision to the APE and methodology of survey for the AI study.
September 28, 2011	SHPO stated in a letter that the APE additions were "appropriate" and that the office was "satisfied with proposed methodology."
November 10, 2011	SHPO, INDOT, and FHWA held field review of selected resources within the Section 5 APE.
January 6, 2012	SHPO sent letter requesting the addition of Robert Bernacki as a consulting party.
January 11, 2012	Meeting and field visit held with SHPO, INDOT, and FHWA to discuss potential historic landscape districts.
January 13, 2012	*Historic Property Report, Additional Information* (AI Report) delivered to the SHPO.
January 13, 2012	FHWA sent letter inviting Section 5 consulting parties, including SHPO, to the third consulting party meeting, to be held on January 31, 2012. Consulting parties were given a CD copy of the AI Report with the invitation.

January 24, 2012 The *Consideration of and Findings regarding Dimension Limestone Resources within the I-69 Section 5 Area of Potential Effects* delivered to the SHPO and to consulting parties.

January 31, 2012 Third consulting party meeting held to discuss APE revisions, the AI survey, and the listed and eligible properties.

February 13, 2012 Third consulting party meeting minutes mailed to consulting parties.

February 17, 2012 Email and letter sent to consulting parties confirming the correct address of the Section 5 Project Office in Bloomington.

February 20, 2012 Draft *Phase Ia Archaeological Survey of the I-69 Evansville-to-Indianapolis Study, Section 5 (from SR 37 to SR 39), Monroe and Morgan Counties, Indiana* sent to SHPO.

February 20, 2012 SHPO concurred with the AI Report and *Consideration of and Findings regarding Dimension Limestone Resources within the I-69 Section 5 Area of Potential Effects* report.

April 5, 2012 SHPO commented on *Phase Ia Archaeological Survey.*

April 9, 2012 FHWA invited SHPO and consulting parties to the fourth consulting party meeting.

April 18, 2012 Final *Phase Ia Archaeological Survey* submitted to SHPO.

April 23, 2012 Transmittal letter sent to those owners of listed and eligible properties, along with a CD copy of the *Identification of Effects Report.*

April 23, 2012 Transmittal letter sent to consulting parties, including SHPO, along with a CD copy of the *Identification of Effects Report.*

April 23, 2012 FHWA signed *Findings and Determinations, Area of Potential Effects and Eligibility Determinations* document.

May 10, 2012 Fourth consulting party meeting held to discuss the effects of the undertaking on historic properties.

May 14, 2012 SHPO concurred with the Archaeology report, *Phase Ia Archaeological Survey.*

May 23, 2012 SHPO sent letter concurring with most findings of the *Identification of Effects Report* but questioning the finding of adverse effect for Alternatives 4 and 5.

May 24, 2012	Minutes from fourth consulting party meeting mailed to consulting parties.
June 6, 2012	Meeting held with SHPO, INDOT, FHWA, and PMC to discuss project alternatives and effects of those alternatives on North Clear Creek Historic Landscape District.
July 12, 2012	SHPO sent letter stating concurrence that "effects of alternatives 4 and 5 [sic] would be adverse."
August 7, 2012	Agency coordination occurred with SHPO to discuss Alternative 8.
October 11, 2012	FHWA signed *Modified Findings and Determinations, Eligibility Determinations and Effects* document.
October 26, 2012	I-69 Evansville to Indianapolis: Tier 2 Studies Section 5, SR 37 South of Bloomington to SR 39 *Draft Environmental Impact Statement* published in the Federal Register.
October 26, 2012	*800.11(e) Documentation* (36 CFR §800.6[a][3]) delivered to the SHPO.
October 26, 2012	FHWA sent letter to consulting parties requesting comments on the *800.11(e) Documentation* (36 CFR §800.6[a][3]), which was included electronically on a CD.
October 26, 2012	*Addendum I: Phase Ia and Ib Archaeological Survey* sent to SHPO.
October 27, 2012	Legal notice of Section 106 effect findings, including the finding of Adverse Effect, posted in the *Bloomington Herald-Times* and the *Martinsville Reporter Times*. Public afforded thirty (30) days to respond.
November 19, 2012	SHPO sent letter responding to *Addendum I: Phase Ia and Ib Archaeological Survey.*
November 21, 2012	SHPO sent letter to FHWA concurring with FHWA's Finding of Adverse Effect.
November 28, 2012	Comment period ended on the *800.11(e) Documentation* (36 CFR §800.6[a][3]).
December 10, 2012	Draft MOA transmitted to SHPO.
December 17, 2012	SHPO provided comments on draft MOA.
January 2, 2013	SHPO provided written concurrence on DEIS.
January 22, 2013	*Addendum II: Phase Ia Archaeological Survey* submitted to the SHPO.

January 30, 2013 FHWA sent letter to SHPO regarding the private-property tree cutting at North Clear Creek Historic Landscape District.

February 1, 2013 SHPO provided response that tree cutting at North Clear Creek Historic Landscape District does not have an Adverse Effect on the district.

February 4, 2013 FHWA transmitted to ACHP: the 800.11(e) documentation dated October 26, 2012, draft MOA, public and consulting party comments on the 800.11(e) dated October 26, 2012, and letters objecting to the finding.

February 11, 2013 FHWA sent follow-up email letter and an additional consulting party comment letter objecting to the finding to ACHP.

February 12, 2013 The MOA and concurrent notification of the objections to the finding of adverse effect was sent to consulting parties and SHPO.

February 20, 2013 SHPO provided informal comments on the *Addendum II: Phase Ia Archaeological Survey* report.

February 21, 2013 SHPO provided informal comments on the wording of the draft MOA.

February 22, 2013 SHPO provided formal comments of the draft MOA.

February 26, 2013 ACHP informed FHWA that it will participate in consultation under Section 106 to develop an MOA.

March 8, 2013 SHPO and consulting parties invited to fifth consulting party meeting at the Section 5 project office to meet with ACHP's representative.

March 8, 2013 SHPO sent letter stating that the agency is "satisfied with the responses by INDOT and FHWA to our January 2, 2013, comments on the DEIS."

March 12, 2013 Revised *Addendum II: Phase Ia Archaeological Survey* report transmitted to SHPO.

March 13, 2013 ACHP, SHPO, FHWA, INDOT and its consultants conducted a field review of properties on which the consulting parties objected to the finding and/or eligibility.

March 14, 2013 Fifth consulting party meeting held at Section 5 Project Office; ACHP in attendance.

March 26, 2013 Revised draft MOA and March 14, 2013 meeting summary sent to consulting parties and ACHP for review.

April 9, 2013	SHPO sent comment letter regarding revisions to the meeting summary and revisions to the draft MOA.
April 9, 2013	SHPO commented formally on the Revised *Addendum II: Phase Ia Archaeological Survey* report (March 12, 2013).
April 15, 2013	ACHP sent comment letter regarding the meeting summary and suggested revisions to draft MOA.
April 23, 2013	FHWA requested written concurrence with the finding of No Adverse Effect on North Clear Creek Historic Landscape District from ACHP.
April 23, 2013	MOA emailed to required and invited signatories.
April 29, 2013	Paper copy of final MOA distributed to SHPO, INDOT, and Monroe County Commissioners for signature.
May 6, 2013	FHWA sent MOA to ACHP for signature.
May 9, 2013	MOA executed: all signatories have signed.
May 9, 2013	ACHP provided written concurrence with the No Adverse Effect finding at North Clear Creek Historic Landscape District.
May 13, 2013	FHWA invited other consulting parties to sign executed MOA as concurring parties.

Identification of Consulting Parties

In mid-May 2004, the Section 5 project team, composed of the section consultant and the PMC, began identifying potential Section 106 consulting parties for Section 5. The Tier 1 list of consulting parties included individuals, representatives of government jurisdictions, Native American tribes, and representatives of various historic groups and other organizations with an interest in historic resources in the Tier 1 26-county Study Area. This list formed the basis for identifying those with an interest in consulting party status for the Tier 2 Section 5 study. In addition, the consultants identified others located in the Section 5 study area who might have an interest in participating as consulting parties. On May 18, 2004, in compliance with Section 106, letters were sent to these potential consulting parties, including Native American Tribes and the SHPO.

In addition to the SHPO, affirmative initial responses were received from the Prairie Band Potawatomi Nation, the Peoria Tribe of Indians of Oklahoma, the Delaware Nation, the Shawnee Tribe of Oklahoma, and the Miami Tribe of Oklahoma. Representatives of the following organizations also agreed to be consulting parties: Bloomington Restorations, Inc.; Citizens for Appropriate Rural Roads (CARR); City of Mitchell (Mayor); Hoosier Environmental Council; Historic Landmarks Foundation of Indiana (now Indiana Landmarks), Western Regional, and

Southwest offices; Monroe County Historic Preservation Board of Review (MCHPBR); Morgan County Historian; Owen County CARR; Owen County Preservations, Inc.; and Traditional Arts Indiana. The following organizations were also added to the consulting party list: Morgan County Commissioner; Morgan County Historic Preservation Society; Wabash & Ohio Chapter of the Society for Industrial Archaeology; and Ms. Pauline Spiegel.

The Section 106 process requires coordination with recognized Native American tribes with an interest in the project area. From the list of consulting parties who participated in the Tier 1 Study, 13 tribes were identified and included in the invitations to become consulting parties in Section 5. The tribes mentioned in the above paragraph responded affirmatively to the invitation.

Joanne Stuttgen requested that she be removed as a consulting party representing Traditional Arts Indiana in June 21, 2010.

In September 2011, as the AI survey commenced, the consulting parties list was updated to account for changes in organizational staffing and turnover. As a result, the list was modified as follows: Jesse Kharbanda replaced Tim Maloney as the executive director of the Hoosier Environmental Council; Dr. James Glass replaced Jon Smith as Deputy SHPO; John Carr and Dr. James R. Jones III remained as staff contact for the IDNR/SHPO; Cheryl Ann Munson replaced Sharon McKeen as the representative for the MCHPBR; Erin Shane replaced Mark Yates as the county planner for the Monroe County Preservation Board of Review; Joanne Stuttgen, formerly a consulting party for Traditional Arts Indiana, replaced Joseph E. Mills III as the representative for the Morgan County Historic Preservation Society; Jon Kay replaced Joanne Stuttgen as the representative for Traditional Arts Indiana; and William McNiece replaced Robert Bernacki as the representative for the Wabash and Ohio Chapter of the Society for Industrial Archaeology.

Additional parties were added during the AI study and representatives of organizations were changed. On January 6, 2012, SHPO recommended that Robert Bernacki be added as a consulting party due to his interest in industrial archaeology; Bernacki was added to the list at that time. In January 2012, Nancy Hiestand, a program manager for the City of Bloomington's Housing and Neighborhood Development department, was added as a consulting party after she submitted an email request. On January 29, 2012, Kharbanda requested that Tim Maloney continue as the authorized representative of Hoosier Environmental Council. On February 24, 2012, Maloney, the Senior Policy Director, officially requested to be added back to the consulting party list. In April 2012, at the direction of INDOT, Dr. James Cooper and Paul Brandenburg (Historic Spans Taskforce) were added as consulting parties due to their expertise in historic bridges.

In May 2012, Devin Blankenship replaced Cheryl Ann Munson as chairperson of the MCHPBR and its official representative, and Jackie Scanlan replaced Erin Shane as staff to the board. (At the direction of Blankenship, Munson continued to consult on this project on behalf of the MCHPBR until Duncan Campbell became the authorized Board's representative in March 2013. Debby Reed and Steve Reed were added as consulting parties upon written request on May 11,

2012. In a letter dated February 26, 2013, the ACHP informed FHWA that it would participate in consultation for the project.

Since the publication of the DEIS, the following consulting party contact information changed: After the fall 2012 election season, the Honorable Gary L. Pruett became the Mayor of Mitchell, Indiana, and replaced Dan Terrell as the consulting party representative. Dr. James Glass resigned as deputy director of the DHPA and staff functioned as the representative for this project. In February 2013, Nancy Hiller, the new acting chairperson of the MCHPBR, replaced Devin Blankenship. See **Appendix N**, *Section 106 Documentation*, for consulting party information.

Consulting Party Meetings

First Consulting Party Meeting

On May 18, 2004, FHWA invited consulting parties to the first consulting party meeting for Section 5. The meeting was held on July 13, 2004, at the Section 5 Project Office (Bloomington, IN) to discuss the Section 106 process, review and obtain comments on the APE, and share information about the potential for historic properties within the APE. Representatives of FHWA, INDOT and its consultants, SHPO, and representatives from seven other consulting parties attended the meeting. The team presented an overview of the Section 106 process and reviewed the four primary steps including initiating the process, identifying and evaluating historic properties, assessing the effects of the undertaking on historic properties, and resolving adverse effects to historic properties. The consultants presented information about the current efforts, including preparation of the historic context.

The consultants described the APE and some of the potentially-eligible resources within the APE. Consulting parties were then asked to comment on the APE and the list of potentially eligible properties developed during the Tier 1 study. Specifically, consulting parties discussed the Fullerton House and the Hastings Schoolhouse. Several people voiced concerns over the protection of historic cemeteries. Some were interested in the design of the new highway, but those concerns were directed to other meetings. One consulting party asked about noise studies and was told that all appropriate studies will be conducted and evaluated within the guidelines of INDOT's noise policy. Other comments concerned potential historic districts in the APE and the *Phase Ia Archaeological Survey*. The first consulting party meeting concluded with statements from FHWA regarding next steps, which would include another consulting party meeting after resources had been identified. See **Appendix N**, *Section 106 Documentation*, for documents associated with this meeting including invitation, agenda, minutes, and consulting party comments.

Second Consulting Party Meeting

On June 9, 2005, FHWA invited consulting parties to a second meeting held on June 27, 2005, at the Section 5 Project Office in Bloomington. The purpose of the second consulting party meeting was to discuss the draft HPR prepared by Section 5 historians. In preparation for the

meeting, consulting parties were sent a packet of information that included an executive summary of the draft HPR, descriptions of eligible properties, a table listing all surveyed properties, and a map showing the location of the Section 5 project office. The draft HPR was available for review at the Section 4, 5, and 6 project offices.

In attendance were representatives of FHWA, INDOT and its consultants, SHPO, six additional consulting parties, and a representative of Indiana Limestone Heritage Parks. The team presented the methodology for drafting the HPR, including establishing the APE and identifying properties. This was followed by presentation of the results of the Section 5 identification and evaluation efforts, which included the evaluation of properties within the APE and preparation of the draft HPR. The consultants identified two NRHP-listed and four NRHP-eligible properties within the APE. Regarding archaeology, it was explained that a literature review had been initiated, and an archaeological (Phase Ia) field survey would be conducted as part of the Section 106 process beginning in the spring of 2006.

The presentation concluded with a request for consulting party comments on the draft HPR. Several comments pertaining to the NRHP-eligibility of properties were received. See **Appendix N**, *Section 106 Documentation*, for documents associated with this meeting including invitation, agenda, minutes, and consulting party comments.

Third Consulting Party Meeting

On January 13, 2012, FHWA invited consulting parties to attend the third consulting party meeting to be held on January 31, 2012, at the McCloskey Room (City Hall Complex, 401 North Morton Street, Bloomington). The purpose of the third meeting was to provide an update on Section 106 efforts and to present the findings of recently transmitted electronic copies of the AI Report and the *Consideration of and Findings regarding Dimension Limestone Resources with the I-69 Section 5 Area of Potential Effects*. In attendance were five consulting parties, SHPO, representatives of FHWA, and INDOT with its consultants.

The team outlined work previously completed on the HPR, discussed the need for the AI Report, explained the expanded APE, and discussed changes to properties within the APE since the 2004-2005 survey. The consulting parties asked questions about the APE and the properties that had been demolished since the 2008 HPR. The project team presented findings of the AI Report and noted that historians identified two NRHP-listed properties, four bridges determined to be eligible for the NRHP by the Indiana Statewide Historic Bridge Inventory, and two other individually NRHP-eligible properties. The consulting parties had no questions regarding the AI Report. The team presented the findings regarding the dimension limestone industry. Three distinct historic landscape districts were discussed, all of which were recommended as eligible for listing in the NRHP. Consulting parties questioned the proposed boundaries for the historic landscape districts, especially where the proposed districts fall outside the limits of the APE. The consulting parties questioned the resources surveyed within the proposed historic landscape districts. Regarding archaeology, the team provided an overview of the *Phase Ia Archaeological Survey*. A portion of the work had been completed; the remainder was scheduled to be completed in 2012. There were no questions regarding the archaeological investigation. The

formal presentation concluded with a request for consulting party comments on the documents discussed at the meeting.

Several comments pertaining to specific resources were directed to project consultants. Examples of these resources include the Parks School on Acuff Road, the stone walls along Bell Road, the remains of Stout Mill, the house at 2102 Vernal Pike, and ranch homes along Arlington Road. There were questions about the NRHP eligibility and Contributing status of various properties. See **Appendix N**, *Section 106 Documentation*, for documents associated with this meeting including invitation, agenda, minutes, and consulting party comments.

Fourth Consulting Party Meeting

On April 9, 2012, FHWA invited consulting parties to attend the fourth consulting party meeting to be held on May 10, 2012, at the Holiday Inn Express in Bloomington (117 South Franklin Road). The purpose of the fourth meeting was to provide an update on Section 106 efforts and to discuss the effects of the proposed undertaking on identified historic resources within the Section 5 APE, as detailed in the *Identification of Effects Report*, mailed to consulting parties and property owners on April 23, 2012. The meeting was also used to address comments and concerns to various resources within the APE. In attendance were SHPO, four additional consulting parties, four property owners, one member of the public, and representatives of FHWA, as well as INDOT and its consultants.

The team outlined the present status of the Section 106 Process, including a brief recap of the steps of the Section 106 Process, previous reports, and consulting party meetings. The project consultants discussed the Thomas L. Brown School, recommended as Contributing to the historic fabric of Monroe County but not NRHP-eligible, and 3275 North Prow Road, recommended as Contributing but not eligible for the NRHP. The project team described the effects of various proposed project alternatives on the 11 NRHP-listed or NRHP-eligible properties within the APE, including the Daniel Stout House, Maple Grove Road Rural Historic District, Monroe County Bridge No. 83, Stipp-Bender Farmstead, Maurice Head House, North Clear Creek Historic Landscape District, Hunter Valley Historic Landscape District, Reed Historic Landscape District, Monroe County Bridge No. 913, Morgan County Bridge No. 161, and Morgan County Bridge No. 224. See **Chapter 3**, *Alternatives*, of this document for a description of project alternatives.

Regarding archaeology, the team provided a summary of archaeological findings to date and explained that additional survey would begin in June 2012. Project archaeologists had completed the *Phase Ia Archaeological Survey* report in which 41 sites were identified, one of which required additional investigation. Cheryl Ann Munson, former representative of the MCHPBR, asked about a site containing Woodland pottery.

After the formal presentation concluded, several consulting parties asked questions. Ms. Munson inquired about the alternatives chosen for the corridor; she asked about the construction of a wall or concrete barrier next to the North Clear Creek and Maple Grove Road districts and about barriers in general. Munson inquired about the use of tree buffers in the vicinities of

Maple Grove Road Rural Historic District, Maurice Head House, Stipp-Bender Farmstead, and the limestone districts and about acquiring property to serve as a buffer. Nelson Shaffer, member of the public, asked about wetland mitigation, and John Carr, IDNR/SHPO, asked about the target date for completing Section 106. See **Appendix N**, *Section 106 Documentation*, for documents associated with this meeting including invitation, agenda, minutes, and consulting party comments.

Fifth Consulting Party Meeting

On March 8, 2013, consulting parties were invited to attend a fifth consulting party meeting to be held on March 14, 2013, at the Section 5 Project Office at 3802 Industrial Boulevard, Unit 2, Bloomington, Indiana. The purpose of the fifth consulting party meeting was to provide an opportunity for consulting parties to meet with the ACHP's representative to discuss consulting parties' objections to the finding of No Adverse Effect on aboveground resources for this project. In attendance were the ACHP, SHPO, four additional consulting parties, and representatives of FHWA, as well as INDOT and its consultants.

FHWA and its consultants outlined the present status of Section 106 consultations and discussed the Section 5 MOA, which has been prepared to address Tier 1 Stipulations and potential effects on archaeological resources. Carol Legard, the representative of the ACHP, was introduced. Consulting parties asked that drainage issues (volume and water quality) as they relate to historic resources, especially quarries, be addressed in the MOA. They further requested the use of blocks of limestone as design elements along the undertaking. FHWA and its consultants spoke about safety concerns associated with the use of limestone landscaping/barrier treatments. The group agreed to consider the use of limestone as treatment for bridges and community "gateways" in the MOA.

Consulting parties questioned the eligibility of two resources: Thomas Brown School and the house at 3275 North Prow Road. Project consultants reviewed the efforts that had been undertaken to consider the comments of consulting parties regarding eligibility on both properties. Carol Legard said since the SHPO agreed with eligibility and that comments of consulting parties had been taken into consideration, the ACHP was satisfied that the process had been followed.

Consulting parties said that they did not think the MOA stipulation providing for a brochure on the dimension limestone industry was appropriate mitigation since there was a similar brochure already. Consulting parties favored a tour of quarrying properties and a Multiple Property Listing for the dimension limestone industry. It was decided to revise the MOA to remove the stipulation of the brochure and to include new stipulations. See **Appendix N**, *Section 106 Documentation*, for documents associated with this meeting including invitation, meeting summary, and consulting party comments.

Consultation with ACHP

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and afford the ACHP a reasonable opportunity to comment on such undertakings (36 CFR §800.1(a)).

In a letter dated February 4, 2013 (and received February 11, 2013), FHWA notified the ACHP of the finding of Adverse Effect (due to the fact that the undertaking's effects on archaeological resources is not yet known) for Section 5 of the I-69 undertaking. As per 36 CFR §800.6(a)(1), the agency provided documentation of the finding dated October 26, 2012, as specified in 36 CFR §800.11(e) and a draft MOA .

Consulting parties had disagreed in writing with the agency's finding of No Adverse Effect for aboveground resources. Therefore, as per 36 CFR §800.5(c)(2), in a letter dated February 4, 2013, the agency requested the ACHP review the finding and to provide comments as to whether the adverse effect criteria had been correctly applied. On February 11, 2013, FHWA forwarded an additional consulting party letter objecting to the finding of effect to the ACHP. On February 12, 2013, project consultants notified the consulting parties that the submission had been made to the ACHP. FHWA also provided SHPO and consulting parties with a copy of the draft MOA that had been revised incorporating comments of SHPO from December 17, 2012.

On February 26, 2013, the ACHP responded that it would "participate in consultation under Section 106 of the National Historic Preservation Act (16 U.S.C. §470[f]) to develop a Memorandum of Agreement for the proposed project."

On March 8, 2013, project consultants invited consulting parties to attend the fifth consulting party meeting to be held on March 14, with the ACHP in attendance. On March 13, 2013, the ACHP, SHPO, INDOT, FHWA, and project consultants conducted a field review of those properties on which consulting parties had objected to the finding. On March 14, 2013, the representative of the ACHP met with consulting parties, SHPO, FHWA, INDOT and its consultants at the Section 5 Project office to discuss objections to the finding and potential stipulations in the draft MOA. FHWA and INDOT took the comments from the consulting party meeting into consideration and revised the MOA.

On March 26, 2013, the MOA was sent to the ACHP and to consulting parties with a copy of the meeting summary from March 14, 2013. On April 9, 2013, SHPO responded to FHWA that it had "no recommendations to offer on the latest draft MOA." On April 15, 2013, the ACHP sent a letter, responding to the meeting summary and draft MOA, The ACHP expressed general appreciation with the opportunities provided to consulting parties to share their concerns. The ACHP indicated that "the revised MOA accurately reflects our understanding of changes agreed upon as a result of these discussions." They provided suggested revisions to the MOA, including correction of a typographical error, clarification of language within clauses and stipulations to clarity and intent.

On April 23, 2013, FHWA transmitted a letter to ACHP to formally notify the latter of the "No Adverse Effect" determination for the North Clear Creek Historic Landscape District. The letter requested the ACHP provide written concurrence of the finding. It also indicated that after receiving ACHP's concurrence with the finding, FHWA intends to make a *de minimis* impact finding for the property under Section 4(f). The ACHP concurred with the No Adverse Effect Finding on North Clear Creek Historic Landscape District on May 9, 2013.

On April 23, 2013, project consultants emailed the revised MOA to the signatories and invited signatories. The email requested careful consideration of the provided text and indicated that a paper copy of the MOA, for signature, would be delivered shortly. Paper copies were distributed for signature on April 29, 2013. On May 9, 2013, the ACHP signed the MOA; all other signatories had signed previously. FHWA sent the fully executed MOA to other consulting parties with an invitation to sign as concurring parties on May 13, 2013. The MOA including all pages with concurring signatures is an appendix item in the final 800.11(e) documentation (36 CFR 800.6[a][3]).

See **Appendix N**, *Section 106 Documentation*, for documents associated with ACHP consultation and for a copy of the MOA.

5.13.2.2 Area of Potential Effects

The APE is the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of the undertaking…" (36 CFR §800.16(d)).

FHWA, in consultation with the SHPO, determined the APE for the corridor alternatives studied during Tier 1. The APE for the Tier 2 aboveground resources survey in Section 5 centered on Alternative 3C, a primarily 2,000-foot wide corridor that was selected in the Tier 1 Record of Decision (Tier 1 ROD), as the preferred alternative to advance to the Tier 2 Studies. In Section 5, Alternative 3C primarily uses SR 37, an existing four-lane divided highway, for much of its right-of-way. In order to study potential effects of the undertaking on historic properties, the length of the APE of Section 5 extends one mile beyond the termini of the approximately 21-mile long corridor. This results in areas of overlap with both Section 4 and Section 6. According to the Tier 1 MOA, "[t]his analysis is intended to ensure that decisions reached in one section do not prematurely limit consideration of avoidance alternatives for resources in adjacent sections." In general, the APE for the Tier 2, Section 5 Corridor is not less than 4,000 feet wide and is centered on existing SR 37, a four-lane divided highway. In some areas of relatively flat relief, the APE was expanded to incorporate any potential physical, temporary and long-term visual, atmospheric, or audible impacts or alterations to aboveground NRHP potentially eligible resources. The areas that had the potential to be affected beyond the 4,000-foot wide corridor were identified through close consultation with aerial photography and topographical mapping. The SHPO concurred with the APE in a letter dated May 25, 2005.

In the summer of 2011, the APE was enlarged in some areas to accommodate for additional potential effects. In some locations, due to the study of potential intersection improvements on

other roads adjacent to SR 37, the APE was expanded. Primarily, the potential intersection upgrades would occur to serve traffic leading to and from the project area. Potential improvements include road paving, restriping, and the addition of turn lanes. In the potential intersection improvement areas, the APE was drawn to encompass the approximate project footprint and to create a buffer around the intersection. In these areas, the APE remained relatively narrow due to the low probability of effect to resources (because the scope of work in these areas primarily includes road paving, restriping, and addition of turn lanes). This boundary took into consideration the type of terrain and foliage, lines of sight to and from the intersection, and types and heights of surrounding buildings and structures. Generally, the APE in the potential intersection improvement areas included the buildings and parcels immediately abutting the potential project area. In addition, the APE was expanded at potential highway interchanges located along Liberty Church Road, Paragon Road/Pine Boulevard, Sample Road, Walnut Street, and Kinser Pike. The APE now extended out from the center of those interchanges, incorporating any lands that may be visible from the Interstate (by a person of average height), in consideration of existing tree stands and vegetation, field visits, and topographic mapping. The SHPO concurred with the expanded APE in a letter dated September 28, 2011. See **Appendix N**, *Section 106 Documentation*, for a graphical illustration of the APE and for copies of SHPO correspondence, including the APE Justification letter. See **Chapter 3**, *Alternatives*, for a description of the project alternatives.

5.13.2.3 Research

Prior to conducting Tier 2 fieldwork, the Section 5 historians conducted research to review the published literature and to identify and obtain sources of information pertinent to the history and architecture of Monroe and Morgan counties, reviewed the National and State registers to identify any listed properties and obtain the relevant documentation, and examined the historic property survey records and files housed at the IDNR-DHPA to obtain any relevant documentation.

Other repositories that provided pertinent general and specific histories relative to the project area include: Monroe County Public Library, Bloomington; Morgan County Public Library, Martinsville; Indiana State Archives, Indianapolis; Monroe County Recorder's Office, Auditor's Office, and Clerk's Office, Bloomington; Morgan County Recorder's Office and Auditor's Office, Martinsville; Indiana University Herman B. Wells Library, Bloomington; Indiana Geological Survey, Bloomington; Bloomington Restorations, Inc., Bloomington; and the Monroe County Historical Society, Bloomington.

The historians identified and consulted a variety of sources including records of the population censuses of 1850 through 1930; newspaper obituaries; county histories; the interim reports[2] published for Monroe and Morgan counties and Bloomington; and personal interviews with local historians, property owners, and consulting parties. Other sources included a review of city directories, historic photographs, historic county maps, historic topographical maps (United States Geological Survey [USGS]), historic aerials, plat maps, and on-line source materials.

In 2011, the following sources (not available in 2004) were also reviewed: State Historical Architectural and Archaeological Research Database (SHAARD) and the Indiana Statewide Historic Bridge Inventory.

5.13.2.4 Fieldwork

In 2004, the project historians initially surveyed and inventoried resources associated with a locally important theme and with at least a moderate level of integrity. This survey effort revealed 320 previously and newly identified aboveground resources greater than 50 years of age within the Section 5 APE. The field surveys coupled with the contextual research determined that 216 of the extant resources either lacked historical or architectural significance or did not retain sufficient integrity to convey their significance. The remaining 104 aboveground resources consisted of 34 previously unidentified resources in Monroe County and 6 in Morgan County, while 64 had been previously documented in the Morgan County, the Monroe County, and the City of Bloomington interim reports, as well as James L. Cooper's *Iron Monuments to Distant Posterity*, and *Artistry and Ingenuity in Artificial Stone*. The field survey found that 15 of the 64 previously identified resources had been demolished. See **Appendix N,** *Section 106 Documentation*, for the HPR.

An AI historic property survey was conducted in 2011 for evaluation of aboveground resources from the "recent past" (in this case, properties constructed between 1954 and 1967) within the APE meriting a Contributing[3] or higher rating, as defined through the Indiana Historic Sites and

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[2] Each year DHPA funds matching grants that allow counties within the state to be surveyed for the identification of architectural and historical resources. To be included in the survey, a property must be at least 40 years old and retain sufficient historic integrity to contribute to the historic fabric of the area. The survey rates a structure as "Notable" or "Outstanding" if it is an excellent, relatively unaltered example of a particular architectural style and/or has a strong association with history, settlement patterns, or important figures. Buildings that are rated notable or outstanding may be eligible for listing in the NRHP. The inventory field work concludes with the publication of an *Interim Report*, so named because the changing nature of the built environment precludes a "final" inventory, e.g., some structures are demolished while others are added. (Sources: Division of Historic Preservation and Archaeology, "County Survey Program," Indiana Department of Natural Resources, http://www.in.gov/dnr/historic/2824.htm; and Indiana Landmarks, "Questions About Surveys," http://www.indianalandmarks.org/Resources/ArchitecturalSurveys/Pages/QuestionsAboutSurveys.aspx)

[3] The word "Contributing" carries multiple meanings. Consistent with the terminology of the IHSS Inventory, individual properties that meet the age requirement and that possess some integrity and some significance but which are not individually eligible for listing in the NRHP are labeled as "Contributing" resources as a way of classification. The word "Contributing" also carries another meaning in regards to NRHP districts. In that context, resources that may lack individual distinction but are part of an eligible district may be considered "Contributing" to the district. Therefore, properties may be considered as contributing to the history of the county and not eligible for listing in the NRHP and/or they may be considered as a contributing element within a NRHP-eligible district but not individually eligible for listing in the NRHP.

Structures Inventory (IHSSI) Manual and refined through consultation with the DHPA. In addition, to ascertain if there had been significant changes, historians conducted a reconnaissance-level review of previously-inventoried Contributing or higher properties greater than 50 years of age from the 2004-2005 survey and documented them in the AI Report. Through subsequent research, consultation, and survey, five properties previously considered to be Non-Contributing were changed to Contributing. Finally, historians also surveyed all pre-1967 properties within APE expansion areas. In total, historians surveyed approximately 1,000 properties at the reconnaissance level and 92 resources at the intensive level, 90 of which were considered Contributing or higher. See **Appendix N,** *Section 106 Documentation,* for AI Report.

5.13.2.5 Consideration of the Fullerton House

In the identification and evaluation phase of the historic resource survey in 2005, FHWA and its consultants recommended that the Fullerton House in Monroe County was not eligible for listing in the NRHP. These findings were documented in the HPR for Section 5. See **Appendix N**, *Section 106 Documentation,* for a copy of the HPR. Consulting parties had brought the property to the attention of the consultants at the consulting party meeting held July 12, 2004; therefore, consultants asked the SHPO to visit the property during a field review on May 27, 2005. Consultant recommendations were documented in the HPR (draft June 9, 2005, and final January 9, 2008). At the June 27, 2005, consulting party meeting, consulting parties questioned the recommendation contained in the draft report. On August 1, 2005, the SHPO concurred with the "vast majority" of findings of the HPR, which had included a recommendation regarding the eligibility of the Fullerton property. Subsequently, two consulting parties submitted written comments regarding this property; therefore, at the request of FHWA, the project historians prepared an eligibility report for the property. The *Report on the Determination of Eligibility of the Fullerton House for Listing in the National Register of Historic Places,* which recommended that the Fullerton house was not eligible for listing in the NRHP, was submitted to SHPO on April 25, 2007; on May 25, 2007, SHPO responded affirmatively to the report but suggested revisions. After incorporating SHPO's suggestions, FHWA submitted a *Report on the Determination of Eligibility of the Fullerton House for Listing in the National Register of Historic Places* to the Keeper of the NRHP in June 2007. On July 27, 2007, the Keeper of the NRHP determined that the Fullerton House was not eligible for the NRHP. See **Appendix N**, *Section 106 Documentation*, for documentation of consultation associated with the NRHP eligibility of the Fullerton House.

5.13.2.6 Consideration of 2102 West Vernal Pike

Following the 2004-2005 survey, project historians recommended the Queen Anne residence at 2102 West Vernal Pike not eligible for listing in the NRHP because of a lack of integrity. Afterward, consulting parties asked for a reconsideration of eligibility. Consultants revisited the property during the September 2011 survey and conducted additional historical property research. During a November 11, 2011, site visit, SHPO concurred that the property was not eligible for listing in the NRHP due to integrity issues, but would, however, be considered a Contributing resource in the IHSSI survey. The Section 5 historians continued to search for links that could tie the building to local architect John Nichols but were not successful. See **Appendix**

N, *Section 106 Documentation*, for documentation of consultation associated with the NRHP eligibility of 2101 West Vernal Pike.

5.13.2.7 Consideration of 3275 North Prow Road

During the 2004-2005 survey, the farmstead at 3275 North Prow Road was identified as a Non-Contributing resource because of the replacement siding, replacement windows, additions to the structure, and the presence of a modern pole barn. During the AI survey, based on consulting party comments and letters urging elevated status of the property, the property was reevaluated. On February 2, 2012, after consultation with the property owner, a project consultant visited the property to note exterior changes at the property and to update photos. The property owners provided some additional research material, but not the local, state, and national historic nomination forms, which were being prepared by the property owner and her consultant in the spring of 2012. Further attempts to visit the property and view the inside of the buildings were not successful. Project historians conducted additional research using historic maps and aerial images, U.S. Census records, and local historical texts and county histories, but were unable to find evidence supporting NRHP eligibility. The historians did, however, elevate its status to Contributing after observing only one window had been replaced and after finding it compared favorably to other similar Contributing properties in the APE. See **Appendix N**, *Section 106 Documentation*, for correspondence from consulting parties regarding the property.

As part of additional research efforts, INDOT charged historians on the PMC to evaluate a potential expansion of the Reed Historic Landscape District to include the residential property at 3275 North Prow Road (and possibly properties located between Reed district and 3275 North Prow Road). The phased research approach involved a review of Monroe County Geographic Information System (GIS) data, historic plat and topographic mapping, census records, city directories, and obituaries. Following this research, historians did not uncover any clear associations with the house at 3275 North Prow Road—or other residential housing south of 3275 North Prow Road—and the Reed Historic Landscape District. Historians recommended no further research and no change to the boundaries of the Reed Historic Landscape District. This information was conveyed to FHWA, INDOT, and SHPO in a meeting on June 6, 2012. In November 2012, the MCHPBR notified FHWA that the property received local designation as a "historic district, approved by the Monroe County Commissioners in accordance with the County's historic preservation ordinance." At the fifth consulting party meeting held with the ACHP on March 14, 2013, consulting parties again questioned the eligibility of the resource and its exclusion from the Reed Historic Landscape District. At that time, the representative from the SHPO stated that a number of rationales for eligibility had been suggested but the staff did not feel that individually or collectively, the rationales rose to NRHP significance. See **Appendix N**, *Section 106 Documentation*, for Memorandum regarding 3275 North Prow Road, for agency coordination meeting summaries, and for meeting summary of the fifth consulting party meeting.

5.13.2.8 Consideration of Thomas L. Brown Elementary School

The Thomas L. Brown Elementary School (1967-1968) was identified during the 2011 AI Study as a Contributing resource. After the January 31, 2012, consulting party meeting, a consulting party asked consultants to reconsider the school for NRHP eligibility, within the context of the school consolidation movement. Project historians reviewed their research files and investigated avenues of data that were previously not examined. The consultants evaluated the property in reference to the NRHP criteria. Following this additional consideration, Thomas L. Brown School was not recommended eligible for the NRHP due to the lack of an association with significant educational or architectural trends or an association with a significant individual. Specifically, the school's construction was not tied to either county or township consolidation, and it was deemed a very late example of a mid-century modern school, with no unusual distinguishing features. At the fifth consulting party meeting held with the ACHP on March 14, 2013, consulting parties again questioned the eligibility of this resource; at that the SHPO representative stated that based on the information presented, the staff has agreed that the resources is not eligible. See **Appendix N**, *Section 106 Documentation*, for AI Report, meeting minutes, correspondence from consulting parties regarding the property.

5.13.2.9 Hardship Acquisitions

The Tier 1 ROD for the I-69 Evansville to Indianapolis project approved "the use of federal funds for property acquisition for the project to the extent that such acquisitions met the conditions for a hardship or protective acquisition, as defined in applicable FHWA regulations" (ROD, March 24, 2004, Section 2.1.8). Between February 2009 and 2012, INDOT conducted Section 106 consultation on three properties located within the Section 5 APE as part of the Hardship Acquisition Program in the Section 5 APE: 2480 State Road 37 in Martinsville (Boger Property), 750 East Chambers Pike in Bloomington (Smith Property), and 3301 Tapp Road in Bloomington (Martin Property) (the Martin Property was later purchased by the City of Bloomington). In addition, Section 106 consultation occurred as part of the INDOT/FEMA effort[4] in 2009: 3895 Old State Road 37 South in Martinsville (Chirpas Property), 3926 Old State Road 37 South in Martinsville (Huff Property), and 3920 Old State Road 37 South in Martinsville (Plummer Property).

The above listed property acquisitions (3301 Tapp Road, the Martin Property, was not acquired by INDOT), along with the planned demolition of the buildings thereon, were conducted in accordance with 36 CFR Part 800, as the actions meet the definition of *undertaking*, as per 36 CFR §800.16(y). Each project underwent individual Section 106 consultation and agency coordination and referenced the Section 5 *Historic Property Report* and/or the AI Report. Section 5 consulting parties were sent documentation associated with the Section 106 process for each project and were provided the opportunity to comment.

[4] Localized flooding the previous year damaged many properties. INDOT purchased homes from which they might need property; otherwise the FEMA purchase would have precluded any kind of future construction on those parcels.

As of February 2013, all of the properties had been demolished with the exception of the Martin Property at 3301 Tapp Road. While INDOT conducted the full Section 106 consultation for the Martin Property, the owner later withdrew the request for consideration under the Hardship Acquisition Policy after the City of Bloomington purchased the property in 2009.

Protective Buying and Building Demolition on Future I-69, south of Liberty Church Road (parcels at 3895, 3920, and 3926 Old State Road 37; I-69 Section 5; processed under INDOT DES. No. 0900013): On February 11, 2009, the INDOT Environmental Policy Office sent the SHPO coordination materials regarding the acquisition of these parcels (letter from Ben Lawrence). INDOT's Cultural Resources Office (letter from Christopher Koeppel) sent the SHPO and all consulting parties coordination materials regarding the acquisition of these parcels on February 27, 2009. On March 16, 2009, SHPO replied that there was not enough information regarding potential archaeological resources. On March 17, 2009, SHPO sent a letter confirming that no aboveground resources are in the project area but indicated that further comment on archaeological resources would be provided once the "archaeological assessment" was completed. On April 2, 2009, INDOT sent the SHPO an "Archaeological Records Check and Phase Ia Field Reconnaissance Report Concerning Protective Buying on Future I-69 Corridor, SR 37, South of Liberty Church Road, Morgan County, Indiana, and Southwest Quadrant of SR 37 at the Intersection with Tapp Road, Monroe County, Indiana," for these parcels (Laswell, 3/27/09). On April 30, 2009, SHPO sent a letter to INDOT concurring with the Archaeological Phase Ia.

On September 8, 2011, INDOT sent a letter to consulting parties re-initiating consultation for the demolition of buildings on the three properties. On October 11, 2011, SHPO concurred with an additional Archaeological Phase Ia Report, "Buildings and structures information and Indiana archaeological short report," (Moffatt, 9/1/11) sent on September 8, 2011. On October 14, 2011, INDOT sent a finding of "No Adverse Effect" to SHPO and on October 21, 2011, published a public notice of "no adverse effect"; SHPO concurred with the finding on November 14, 2011. No other consulting parties provided any communication about these parcels.

Protective Buying and Building Demolition on Future I-69, Southwest Quadrant of SR 37 at the Intersection with Tapp Road (3301 Tapp Road; processed under INDOT DES. No. 0810395): On February 26, 2009, INDOT's Cultural Resources Office sent SHPO and consulting parties an Early Coordination Letter for this property. On March 27, 2009, SHPO agreed that the project area contained no aboveground properties eligible for inclusion in the NRHP. SHPO indicated that further comment on archaeological resources would be provided once the "archaeological assessment" was completed. On April 2, 2009, INDOT sent an archaeological records check and Phase Ia reconnaissance report, "Concerning Protective Buying on Future I-69 Corridor SR 37 South of Liberty Church Road, Morgan County, Indiana and Southwest Quadrant of SR 37 at the Intersection with Tapp Road, Monroe County" (Laswell, 3/27/09), to SHPO. On April 30, 2012, SHPO concurred with the findings of the report and indicated that it was time to make a determination and documentation of findings.

On June 1, 2009, SHPO received FHWA's 36 CFR §800.4(d)(1) documentation of No Historic Properties Affected (dated May 27, 2009) for "Protective Buying on Future I-69, Southwest

Quadrant of SR 37 at the Intersection with Tapp Road," (circa 1967, 3301 Tapp Road, Martin property). In a letter dated June 23, 2009, SHPO concurred with INDOT's finding on behalf of the FHWA, that there are no historic resources within the APE that will be affected by the project. Only one other consulting party commented on this property acquisition and demolition. Dr. Joanne Raetz Stuttgen, folklorist and the Morgan County Historian, replied in a letter dated March 10, 2009, that she concurred with INDOT's preliminary finding that the acquisition and demolition of this property would result in "No Historic Properties Affected." See **Appendix N**, *Section 106 Documentation*, for correspondence regarding hardship acquisition properties.

Hardship Acquisition and Building Demolition on Future I-69, Boger Property located adjacent to SR 37 southwest of Martinsville and immediately north of Legendary Hills, Morgan County, Indiana (Processed under INDOT DES. No. 1005971): On December 3, 2010, INDOT sent an Early Coordination Letter to consulting parties initiating consultation. Indiana Landmarks sent a letter dated December 10, 2010, indicating that the office believed that there would be no adverse effect due to the project. The Morgan County Historian responded via email on January 5, 2011. In part, she stated that she was "in agreement that no historic properties will be affected by the demolition of this house and related buildings." She noted that the subject property was originally built and owned by a Martinsville mail carrier, Lloyd James, who also served as a local historian.

On December 14, 2010, an Archaeological Literature Review and Phase Ia Field Reconnaissance (Laswell 12/10/10) was submitted to the SHPO for review. On January 13, 2011, SHPO concurred with the report findings and with INDOT's assessment that the property did not contain any resources eligible for listing in the NRHP. On January 14, 2011, INDOT, on FHWA's behalf, signed a Findings and Determinations document and compiled the 36 CFR §800.4(d)(1) documentation of "No Historic Properties Affected," regarding the Boger Property. On February 7, 2011, SHPO agreed with these findings. See **Appendix N**, *Section 106 Documentation*, for correspondence regarding hardship acquisition properties.

Hardship Acquisition and Building Demolition on Future I-69, Section 5, Smith Property located adjacent to SR 37, 8.0 miles south of the SR 39 interchange with Chambers Pike, Monroe County, Indiana (750 East Chambers Pike; processed under INDOT DES. No. 1173066): On July 1, 2011, INDOT sent an Early Coordination Letter initiating consultation. The Morgan County Historian responded on July 11, 2011. In part, she stated that she concurred with the determination of "No Historic Properties Affected." She made a comment about the nearby log house, Site No. 105-417-05028. On July 27, 2011, the MCHPBR responded. The letter expressed discouragement at the loss of 750 East Chambers Pike, and pointed out a property across the road (SR 37), which had recently become over 50 years old. The MCHPBR encouraged INDOT to evaluate this ranch house, at 9125 North Mann Road, as part of the I-69 Section 5 studies. On August 1, 2011, SHPO responded with agreement that the house at 750 East Chambers Pike is not eligible for listing in the NHRP, but indicated that it would be prudent to defer determinations until after all "prerequisite steps of the process have been completed" to identify resources (including archaeological). On August 5, 2011, an Archaeological Short Report (Moffatt 8/4/11) was submitted to the SHPO for review. The SHPO concurred with the report conclusions in a letter dated August 26, 2011.

On August 17, 2011, INDOT sent a letter to consulting parties indicating that the Section 106 process for the demolition of the Smith Property was being put on hold because I-69 Section 5 consultants were completing an AI Study in late 2011. On February 28, 2012, INDOT sent a letter to SHPO, and copied the consulting parties mentioned above, indicating that the demolition of the Smith property was ready to proceed, as the AI Study was completed. Through the letter, INDOT advised SHPO of its determination of "No Historic Properties Affected" for the undertaking. On March 23, 2012, SHPO concurred with INDOT's findings. In February 2013, the Smith Property was demolished. See **Appendix N**, *Section 106 Documentation*, for correspondence regarding hardship acquisition properties.

5.13.3 Identification and Evaluation of Aboveground Historic Resources

Project historians identified and evaluated aboveground resources in consultation with the Indiana SHPO and the consulting parties for this project. The HPR and the AI Report prepared for Section 5 document the methodology and recommended findings of eligibility as part of the Section 106 process.

The Tier 1 FEIS provides a detailed description of the historical context of Southwest Indiana. **Chapter 4**, *Affected Environment*, of this Tier 2 DEIS provides description of the cultural overview (**Section 4.4.1**, *Cultural Overview*) and historic setting (**Section 4.4.2**, *Historic Setting*) applicable to Section 5 of the I-69 Evansville to Indianapolis project.

Aboveground resources within the APE were evaluated to determine their eligibility for listing in the NRHP based on their integrity and their ability to meet one or more NRHP selection criteria.

The NRHP evaluation criteria[5] stipulates that eligible aboveground properties may be "districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history."

[5] NRHP definitions appear in: "How to Apply the National Register Criteria for Evaluation," *National Register Bulletin* 15 (Washington, D.C.: U.S. Department of the Interior, National Park Service, 1990), 2.

According to the NRHP, "integrity is the ability of a property to convey its significance." There are seven attributes of integrity: location, design, setting, materials, workmanship, feeling, and association. As part of the evaluation process, historians took into account the exemptions specified in 36 CFR §60.4. "Ordinarily cemeteries, birthplaces or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past fifty years…" are not eligible for listing in the NRHP. However, the presence of documented cemeteries was verified whenever practical, and churches were included if they illustrated an architectural or historical theme.

The significance of an aboveground resource can only be determined when it is evaluated within its historic context. NRHP guidance defines historic contexts as "those patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning (and ultimately its significance) within history or prehistory is made clear." Historic contexts identify the trends, patterns, and themes that shaped the history of particular geographic areas during certain time periods and the types of aboveground resources associated with them.

A field survey of the APE and documentary research were conducted to collect data needed to develop a historic context and complete the eligibility determinations according to NRHP guidelines. The survey was completed in accordance with the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and the professional standards common to this type of aboveground resource identification and evaluation.

In the HPR (published in 2008), project historians concluded that one individual property is listed on the NRHP, one historic district is listed on the NRHP, and recommended five others eligible for listing in the NRHP. The Daniel Stout House and the Maple Grove Road Rural Historic District are listed in the NRHP. The Stipp-Bender Farmstead, the Philip Murphy-Jonas May House, Monroe County Bridge No. 913, Morgan County Bridge No. 161, and Morgan County Bridge No. 224 were recommended eligible for listing in the NRHP. The Philip Murphy-Jonas May house has since been demolished. The Borland House and Carl Furst Stone Company Quarry (105-115-35020), a State Register-listed resource, was added to the errata page for this report, as it had been erroneously omitted from the resource count at the time of publishing. See **Appendix N**, *Section 106 Documentation*, for the HPR.

The additional aboveground survey (AI Report, 2011) found that one bridge previously determined not to be NRHP eligible (Monroe County Bridge No. 83) has been determined eligible per INDOT's recent *Indiana Statewide Historic Bridge Inventory*. Further, the Maurice Head House, located within the APE on South East Lane in Monroe County, was identified in the Section 4 AI Report and was determined by FHWA as eligible for listing in the NRHP in 2009. See **Appendix N**, *Section 106 Documentation*, for AI Report.

Additional efforts to document dimension limestone industry resources occurred in 2011. Project historians reexamined all limestone-related resources within the APE to ascertain if more research could result in alternate recommendations of eligibility for those resources. NRHP

bulletins provided the foundation for the evaluation of these limestone areas. In addition to NRHP bulletins 15 and 16, limestone-related resources dealing with the process and industry of mineral extraction may be characterized as *mines* and evaluated (in part) by following the guidelines provided in the NRHP Bulletin 42: *Guidelines for Identifying, Evaluating and Registering Historic Mining Sites*.[6] Project historians also relied heavily upon the NRHP Bulletin 30: *Guidelines for Evaluating and Documenting Rural Historic Landscapes* when reevaluating limestone-related resources within the Section 5 APE.[7]

To research the context for evaluating these resources, historians consulted primary and secondary sources including, but not limited to, historic aerial photography, historic topographical quadrangle maps, historic atlas and railroad maps, various local limestone publications and directories, county histories, historic photographs, discussions with property owners, and multiple on-site visits/surveys. The context proved essential to establishing a period of significance for each of the limestone areas and provided information regarding property types, which was especially helpful for identifying Contributing and Non-Contributing resources within each of the limestone areas.

Additional aboveground survey (*Consideration of and Findings regarding Dimension Limestone Resources within the I-69 Section 5 Area of Potential Effects*) recommended three historic landscape districts that relate to the dimension limestone industry in Monroe County as eligible for the NRHP. The North Clear Creek Historic Landscape District, the Hunter Valley Historic Landscape District, and the Reed Historic Landscape District were recommended eligible for listing in the NRHP. See **Appendix N**, *Section 106 Documentation*, for the *Consideration of and Findings regarding Dimension Limestone Resources within the I-69 Section 5 Area of Potential Effects* report.

5.13.4 Effects Evaluation

An effect is the "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR §800.16(i)). In determining the effects of the undertaking upon historic properties, the finding will be either: No Historic Properties Affected or Historic Properties Affected (36 CFR §800.4(d)(1) and (2)). The results of an Historic Properties Affected assessment will be either: No Adverse Effect or Adverse Effect (36 CFR §800.5 (d)(1) and (2)). According to 36 CFR §800.5(a)(2), "adverse effects include but are not limited to:

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[6] Bruce J. Noble, Jr., and Robert Spude, *National Register Bulletin [42]: Guidelines for Identifying, Evaluating, and Registering Historic Mining Properties.* Washington, D.C.: U.S. Department of the Interior, National Park Service, National Register, History and Education, Revised 1997.

[7] Linda Flint McClelland, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick, *National Register Bulletin [30]: Guidelines for Evaluating and Documenting Rural Historic Landscapes*. Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resources, Revised 1999.

i. Physical destruction or damage to all or part of the property;

ii. Alteration of the property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 800) and applicable guidelines;

iii. Removal of a property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic features;

v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii. Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance."

The Section 5 project team evaluated the undertaking's effects on aboveground historic properties, including consideration of the initial design criteria, as well as the minimal impact design criteria (see **Section 3.2.2.3**, *Preliminary Alternatives (Alternatives 1 to 3)*). This evaluation was based on field observation of site lines and noise modeling. The three effects evaluated for each historic property were direct (destruction or damage), visual intrusion, and noise intrusion. For visual effects, the project team used aerial and topographic mapping, as well as field observation, to determine sight lines between the historic resources and the alternatives under consideration, based on each alternative's proposed horizontal and vertical alignment. Photographs were taken when foliage was at a minimum to portray a scenario with the highest potential effect. For more information on how the existing roadway factored into the analysis of effects on resources, see **Appendix N**, *Section 106 Documentation*, for a copy of the *Identification of Effects Report.*

With regard to consideration of noise effects, the project team used the most current *INDOT Traffic Noise Analysis Procedure*, which was approved by FHWA and went into effect in 2011. The *INDOT Traffic Noise Analysis Procedure* states that highway noise impacts occur if either of two conditions is met: 1) the predicted $L_{eq(h)}$ levels "approach" or "exceed" the appropriate noise abatement criteria for the land use identified, or 2) the predicted highway $L_{eq(h)}$ noise levels substantially exceed the existing noise level. "Approach or exceed" is defined as levels that are within 1 dBA $L_{eq(h)}$ of the appropriate Noise Abatement Criteria (NAC) or higher. "Substantially exceed" means predicted traffic noise levels exceed existing noise levels by 15 dBA or more.

Noise effects upon historic properties attributable to the undertaking were assessed in the following manner. A Traffic Noise Model (TNM)-predicted noise impact was considered an adverse effect. Noise effects were not considered adverse if the undertaking would result in a change in noise (i.e., if an audible increase in noise levels was predicted, or, if traffic noise would be introduced or added to the historic property), but a noise impact per the noise policy was not predicted. Additionally, if the existing ambient noise level currently meets the criteria, then predicted increases are not considered effects unless there is an increase of 15 dBA. Noise effects were also considered not to be present if it was determined that the undertaking would cause no change in noise levels or would not introduce or add to traffic noise.

According to policy, noise receptor locations located more than 800 feet from the edge of the outside travel lane of a roadway are not evaluated for highway traffic noise effects. FHWA has not validated the TNM model for accurate results beyond 800 feet, per FHWA's "TNM Version 2.5 Addendum to Validation of FHWA's Traffic Noise Model® (TNM): Phase 1 Report, July 2004, p. 3." For purposes of this preliminary analysis, the 800-foot distance was used as a conservative measure to capture all potential impacts. Additionally, a noise analysis was not conducted for areas such as the quarries and the bridges because noise levels are not aspects of their settings and because noise is a consequence of their functions. The finding of effects for Section 5 of the I-69 Evansville to Indianapolis Study is: **Historic Properties Affected—Adverse Effect,** due to the fact that the undertaking's effect on archaeological resources is not yet known. For detailed information, see the *Identification of Effects Report* and the 800.11(e) documentation in **Appendix N**, *Section 106 Documentation*. In a letter dated May 23, 2012, SHPO agreed "for the most part" with the effects assessment of this report. The letter suggested that the findings of Adverse Effect proposed for Alternatives 4 and 5 at the North Clear Creek Historic Landscape District should be given additional consideration. After a subsequent site visit, the findings did not change. See **Table 5.13-1** for a summary of aboveground resources on or eligible for the National Register. **Table 5.13-2** lists some select properties that were evaluated but found to not be eligible for the NRHP. The selected properties represent typical Contributing resources surveyed within the APE; they are also representative of property types found throughout the APE (i.e. school, cemetery, I-house, vernacular farmhouse, Ranch house, park, bungalow, bowling alley, etc.). See **Appendix N**, *Section 106 Documentation* (AI Report) for a complete list of surveyed resources.

Table 5.13-1: Eligibility and Effects on NRHP Listed or Eligible Aboveground Properties

Survey No.	Property Name	Address	Property Type	County	NRHP Status	Effects
105-055-25035	Daniel Stout House	3655 North Maple Grove Road	I-House with a Wing Addition, 2-Story	Monroe	NRHP Listed	All Alternatives: No Effect
N/A	Maple Grove Road Rural Historic District	Roughly, Maple Grove Road from Beanblossom Creek to SR 46, including the east half of Lancaster Park subdivision	Historic District	Monroe	NRHP Listed	All Alternatives: No Adverse Effect; Visual and auditory effect will not be adverse

Table 5.13-1: Eligibility and Effects on NRHP Listed or Eligible Aboveground Properties

Survey No.	Property Name	Address	Property Type	County	NRHP Status	Effects
NBI No. 5300061	Monroe County Bridge No. 83	West Dillman Road over Clear Creek	Warren Pony Truss (Steel) Bridge	Monroe	NRHP Eligible	All Alternatives: No Effect
NBI No. 5300130	Monroe County Bridge No. 913	North State Road 37 Business over Beanblossom Creek	Steel Pony Truss Bridge	Monroe	NRHP Eligible	All Alternatives: No Adverse Effect; Visual effect will not be adverse
NBI No. 5500125	Morgan County Bridge No. 161	North Old State Road 37 over Little Indian Creek	Concrete Bridge	Morgan	NRHP Eligible	All Alternatives: No Adverse Effect; Visual effect will not be adverse
NBI No. 5500142	Morgan County Bridge No. 224	South Old State Road 37 over Indian Creek	Warren Pony Truss Bridge	Morgan	NRHP Eligible	All Alternatives: No Adverse Effect; Visual effect will not be adverse
105-115-35055	Stipp-Bender Farmstead	5075 South Victor Pike	I-House/ Italianate Stylistic Details	Monroe	NRHP Eligible	All Alternatives: No Effect
MB18	Maurice Head House	4625 South East Lane	Ranch House	Monroe	NRHP Eligible	All Alternatives: No Effect
Including 105-115-35020, 105-115-35098, and 105-055-35099	North Clear Creek Historic Landscape District	4000 and 3600 South Rockport Road, and 2300 West Tapp Road	Mining District	Monroe	NRHP Eligible	Alternatives 4, 5: Adverse Effect; Direct physical effects will be adverse. Alternatives 6, 7, 8: No Adverse Effect; Visual and direct effects will not be adverse
Including 105-055-25072	Hunter Valley Historic Landscape District	Southwest corner of SR 37 and SR 46	Mining District	Monroe	NRHP Eligible	All Alternatives: No Adverse Effect; Visual effect will not be adverse
Including 105-055-25063	Reed Historic Landscape District	2950 North Prow Road	Mining District	Monroe	NRHP Eligible	All Alternatives: No Effect

Table 5.13-2: Eligibility and Effects on Selected Aboveground Properties

Survey No.	Property Name	Address	Property Type	County	NRHP Status	Effects
105-115-40050	Fullerton House	3540 West Fullerton Pike	I-House	Monroe	Not NRHP Eligible	NA
105-055-90183	House	2102 West Vernal Pike	Queen Anne Cottage	Monroe	Not NRHP Eligible	NA
S5-1013-008	Parks/Hedrick House	3275 North Prow Road	Vernacular Farmhouse	Monroe	Not NRHP Eligible	NA
MB10/ AD 11	William R. Polley House	3030 West Bolin Lane	Ranch House	Monroe	Not NRHP Eligible	NA
105 055 25017	Farm	4851 North Kinser Pike	Hall-and-Parlor, 2-Story Log House	Monroe	Not NRHP Eligible	NA
MB 56	Charles Schroeder House	3746 Oak Leaf Drive	Ranch House	Monroe	Not NRHP Eligible	NA
MB 87	Weimer Lake/ Camp Wapehani	Wapehani Road	Lake/ Park	Monroe	Not NRHP Eligible	NA
Monroe 25059	Griffith Cemetery	SR 37 and Wylie Road	Cemetery	Monroe	Not NRHP Eligible	NA
105-055-90002 / MB 37	Frank Miller-Siebolt House	2015 North Kinser Pike	Bungalow	Monroe	Not NRHP Eligible	NA
MB 50	Tooten-Shiner House	3555 North Maple Grove Road	Ranch House	Monroe	Not NRHP Eligible	NA
MB 67	Thomas L. Brown Elementary School	500 West Simpson Chapel Road	School	Monroe	Not NRHP Eligible	NA
109-279-60035	James Martin House	3405 Godsey Road	Central-Passage House	Morgan	Not NRHP Eligible	NA
109-279-60048	Burns Farmstead	3830 Jordan Road	Gable-Front-and-Wing House and Associated Farmstead	Morgan	Not NRHP Eligible	NA
109-279-60049	Forest Maxwell Farmstead	2165 Liberty Church Road	Farm	Morgan	Not NRHP Eligible	NA

Table 5.13-2: Eligibility and Effects on Selected Aboveground Properties

Survey No.	Property Name	Address	Property Type	County	NRHP Status	Effects
MB 54	Artesian Bowling Alley	1910 Morton Avenue	Bowling Alley/ Recreational	Morgan	Not NRHP Eligible	NA
MB 86	House	590 Virginia Street	Ranch House	Morgan	Not NRHP Eligible	NA

The following is a summary of effects of Refined Preferred Alternative 8. The Refined Preferred Alternative for the Tier 2, Section 5 Study is a derivative of Alternative 8 and portions of Alternatives 4-7. A SHPO letter concurring with the findings of effect for [DEIS] Alternative 8 was issued on November 21, 2012. SHPO also provided a letter of concurrence for the DEIS, dated January 2, 2013. See **Appendix N**, *Section 106 Documentation*, for correspondence.

- Daniel Stout House – There will be No Effect upon this resource.
- Maple Grove Rural Historic District – There will be visual and auditory effects to this resource, but the effects will not be adverse: No Adverse Effect.
- Monroe County Bridge No. 83 – There will be No Effect upon this resource.
- Monroe County Bridge No. 913 – There will be visual effects to this resource, but the effects will not be adverse: No Adverse Effect.
- Morgan County Bridge No. 161 – There will be visual effects to this resource, but the effects will not be adverse: No Adverse Effect.
- Morgan County Bridge No. 224 – There will be visual effects to this resource, but the effects will not be adverse: No Adverse Effect. This resource is in the northern portion of the APE which overlaps with the Section 6 APE. Any effects resulting from Section 6 will be evaluated as part of the Section 6 Section 106 consultation process.
- Stipp-Bender Farmstead – There will be No Effect upon this resource.
- Maurice Head House – There will be No Effect upon this resource.
- North Clear Creek Historic Landscape District – There may be a small direct take of land within the historic property boundary of the North Clear Creek Historic Landscape District and visual changes within the property's setting that include an elevated Fullerton Pike, but the physical and visual effects on the property will not be adverse: No Adverse Effect.

The undertaking will acquire up to 1.96 acres of new right-of-way and the placement of fill material over approximately 1.0-acre of the district along a portion of the district's southern border. This acquisition will remove none of the district's Contributing resources. Therefore, it will not diminish the overall integrity of the district and its ability to convey its historic association with the limestone industry. The undertaking will introduce new visual elements and remove some mature trees from the setting, but FHWA has determined in consultation with SHPO and representatives from the ACHP that these actions will not inhibit the property's ability to convey its historic significance.

As another consideration, consulting parties have indicated that the undertaking has the potential to affect water quality and the quantity of drainage, especially as it relates to inactive quarrying operations (i.e.: Carl Furst Stone Company Quarry sites), which are located in proximity to SR 37. Per the MOA, consultation will occur during the early stages of design to take into consideration this potential to cause effects.

Cumulative impacts were also considered for North Clear Creek Historic Landscape District. "These impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7). Section 106 regulations indicate that cumulative impacts can be a type of adverse effect: "Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" (36 CFR §800.5(a)(1)). Monroe County is undertaking the proposed West Fullerton Pike Road Improvement Project, which will extend West Fullerton Pike east of Rockport Road. This proposed project is described in the *Final Engineering Assessment Prepared for: Monroe County Board of Commissioners, Fullerton Pike Corridor Improvements* report (2012) and has been part of Monroe County's long range plan since 1984. Since the proposed project uses federal funds, it has its own separate Section 106 process, which has identified historic properties and evaluated effects upon resources. FHWA has signed a finding of Adverse Effect for that project; a MOA has been drafted to mitigate adverse effects on the North Clear Creek Historic Landscape District.

- Hunter Valley Historic Landscape District – There will be visual effects to this resource, but the effects will not be adverse: No Adverse Effect.

- Reed Historic Landscape District – There will be No Effect upon this resource.

5.13.5 Resolution of Adverse Effects - Mitigation

FHWA determined an Adverse Effect finding is appropriate for potential effects on archaeological resources. Because there were no adverse effects on aboveground resources, no resolution of adverse effects is required for aboveground resources. An MOA was signed by all signatories on May 9, 2013; FHWA invited other consulting parties to sign the executed document as consulting parties on May 13, 2013. The MOA also includes educational mitigation as part of a larger stipulation for the I-69 corridor provided for in the I-69 Tier 1 MOA. This mitigation involves an educational outreach initiative, coordinated and implemented by the

county with funding from FHWA. Other stipulations in the MOA include the preparation of a Multiple Property Documentation form for inclusion in the NRHP for the local dimension limestone industry, additional coordination during design to avoid highway drainage impacts as it relates to the historic qualities of the quarrying landscape, and a stipulation for context sensitive solutions that would incorporate aesthetic features, such as landscaping or the use of limestone or other treatments, into design. (See **Section 5.14**, *Archaeology Impacts*, for additional information and **Appendix N**, *Section 106 Documentation*, for a copy of the MOA.)

5.13.6 Summary

Regarding aboveground historic resources:

NRHP Properties — One individual property, the Daniel Stout House, is located within the APE of Section 5 and is listed in the NRHP. A determination of No Effect has been made.

NRHP Districts — One historic district, the Maple Grove Road Rural Historic District is located within the APE of Section 5 and is listed in the NRHP. A determination of No Adverse Effect has been made.

Eligible Properties — Six individual properties, Monroe County Bridge No. 83, the Stipp-Bender Farmstead, the Maurice Head House, Monroe County Bridge No. 913, Morgan County Bridge No. 161, and Morgan County Bridge No. 224 are located within the APE of Section 5 and are eligible for listing in the NRHP. A determination of No Effect has been made for Monroe County Bridge No. 83, the Stipp-Bender Farmstead, and the Maurice Head House. A determination of No Adverse Effect has been made for Monroe County Bridge No. 913, Morgan County Bridge No. 224, and Morgan County Bridge No. 161.

Eligible Districts — Three historic landscape districts, North Clear Creek Historic Landscape District, Hunter Valley Historic Landscape District, and Reed Historic Landscape District, are located in the APE of Section 5 and are eligible for inclusion in the NRHP. A determination of No Effect has been made for the Reed Historic Landscape District. A determination of No Adverse Effect has been made for the Hunter Valley Historic Landscape District and the North Clear Creek Historic Landscape District. These three districts are also discussed in **Section 5.14**, *Archaeology Impacts*, which pertains to archaeological resources.

FHWA issued the Findings and Determinations of APE and Eligibility on April 23, 2012.

FHWA issued the Findings and Determinations of Modified Eligibility and Effects on October 11, 2012. The finding of effects for Section 5 of the I-69 Evansville to Indianapolis Study is: **Historic Properties Affected – Adverse Effect** due to the fact that the undertaking's effect on archaeological resources is not yet known.

An MOA was executed on May 9, 2013. The MOA included educational mitigation as part of a larger stipulation for the I-69 corridor that was provided for in the I-69 Tier 1 MOA.

5.14 Archaeology Impacts

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

Since the DEIS, the following substantive changes have been made to this section:

- **Section 5.14.2**, *Methodology* – Additional description of survey work completed for Alternatives 6, 7, 8, and Refined Preferred Alternative 8.

- **Section 5.14.3**, *Summary of Archaeological Resources in Surveyed Portions of Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8* – Name of sub-section changed to reflect the completion of archaeological surveys through 2012. Contents modified to reflect completion of Phase Ia and Ib archaeological studies in 2012. The title of **Table 5.14-2** was changed to reflect all resources.

- **Section 5.14.4,** *Mitigation* **–** Modification of this sub-section to reflect the completion of all archaeological surveys, including the number of sites recommended for additional study if impacted by the project.

- **Section 5.14.5,** *Summary* – Modification of this sub-section to reflect the completion of all archaeological surveys, including the number of sites recommended for additional study if impacted by the project.

5.14.1 Introduction

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, mandates that federal agencies, or their designees, consider the effects of their actions on historic properties. The definition of historic properties includes, but is not limited to, prehistoric or historic sites or districts that may be eligible for listing in the National Register of Historic Places (NRHP). Tier 2 studies for the I-69 Evansville to Indianapolis project include the identification of archaeological resources (36 CFR §800.4), the assessment of effects on archaeological resources (36 CFR §800.5), and consultation to develop methods to avoid, minimize, or mitigate any adverse effects (36 CFR §800.6).

Per 36 CFR §800.4(b)(2), a phased approach has been developed to accomplish Tier 2 archaeological research and evaluation tasks. For the DEIS, archaeological research included literature review, background research, and site files research at the Indiana Department of Natural Resources (IDNR)-Division of Historic Preservation and Archaeology (DHPA) and other pertinent repositories. Information pertaining to previously recorded sites within a 2,000-foot-wide study corridor, identified in the Tier 1 FEIS, was gathered. For the Section 5 Tier 2 FEIS, Phase Ia investigations were conducted within the Area of Potential Effects (APE) for portions of Alternatives 4, 5, 6, 7, and 8. Section 5's Refined Preferred Alternative 8 is

comprised of various features of these alternatives (see **Appendix N**, *Section 106 Documentation*, for graphic depictions of the undertaking). Features used in developing the Refined Preferred Alternative 8 are described in **Table 3-1**. **Section 5.14.2**, *Methodology*, describes the methods employed to accomplish the work in Section 5, and **Section 5.14.3**, *Summary of Archaeological Resources in Surveyed Portions of Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8*, describes the results of that work accomplished in 2006-2007 and in 2012.

The current study is in compliance with Section 106 of the NHPA and with the Indiana Historic Preservation Act (IC-14-21-1). The archaeological research and investigations have been conducted by or directly supervised by professional archaeologists meeting the standards set forth by the United States Department of the Interior detailed in 36 CFR Part 61 and the Secretary of Interior's *Guidelines for Historic Preservation and Archaeology* (48 FR 44716).

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. Accordingly, the impacts to most natural and cultural resources in Section 5 will be lessened (especially on a per-mile basis) in comparison to Sections 1 through 4, which are being constructed primarily on non-transportation terrain. The resource impacts in this chapter include only those outside of the existing right-of-way for SR 37 and other transportation facilities.

5.14.2 Methodology

In the I-69 Tier 1 study, potentially eligible historic and archaeological resources were evaluated using eligibility criteria established under the NHPA (see **Section 5.13.3**, *Identification and Evaluation of Aboveground Historic Resources*, for NRHP Criteria). The purpose of the Tier 1 research was to determine the "likely presence" of historic and archaeological resources within the APE, in accordance with 36 CFR §800.4(b)(2). The description and results of the Tier 1 evaluation are included in the Tier 1 FEIS Chapter 5 and Appendix P. That appendix includes a Memorandum of Agreement (MOA) between the Federal Highway Administration (FHWA) and the Indiana State Historic Preservation Officer (SHPO)[1] identifying the corridor known as Alternative 3C as the Preferred Alternative and agreeing to the steps that would be taken to continue the Section 106 process in Tier 2. The Tier 1 FEIS Appendix P also includes FHWA documentation of a Section 106 finding of potential adverse effects (800.11(e) documentation) and the Section 106 Compliance Plan, which provides a framework for completing the consultation process.

The Tier 2 Section 106 archaeological research has been phased to appropriately correspond with the project's National Environmental Policy Act (NEPA) process. The *Draft Guidebook for*

[1] For the State of Indiana, the Director of the IDNR has been designated as the SHPO. Members of his or her staff in the DHPA typically are involved in the consultation.

Indiana Historic Sites and Structures Inventory—Archaeological Sites, whose stipulations have been followed for these studies, define the phases of archaeological research, summarized below:

- Phase Ia is a surface survey and visual inspection of the soil when ground surface visibility and survey conditions are adequate, or (when ground surface and survey conditions are not adequate) using shovel probes, cores, and/or augering techniques to discover site evidence at or near the surface of the investigated location.
- Phase Ib is an intensive survey with the use of controlled surface collections, piece plotting, or subsurface sampling. For historic sites, it can also consist of deed searches and historical research to gather needed information for assessing the potential importance of those sites.
- Phase Ic is subsurface reconnaissance to locate archaeological sites buried in alluvial, colluvial, or eolian landforms.
- Phase II testing is conducted for sites identified through Phase I investigations that are potentially eligible for the NRHP. Sites are tested to determine the vertical extent of the site, the presence of subsurface cultural features (i.e., hearths, trash/storage pits, living surfaces), the nature and context of deposits, and extent of disturbance, if any. Field research is conducted through the controlled excavation of test units (usually measuring between 1 x 1 meter to 2 x 2 meters). Testing may also involve the stripping of topsoil in areas to identify cultural features. Sites determined eligible for NRHP listing are recommended for avoidance and/or mitigation.
- Phase III projects are designed to mitigate or recover data from significant archaeological sites that cannot be avoided. These projects involve large-scale excavations and recovery efforts to mitigate adverse effects on a site. Mitigation plans are developed to determine the methodology and research design for the project.

The Tier 2 research for Section 5 focused on background research to identify previously recorded archaeological sites and corresponding studies within a 2,000-foot-wide study corridor. The results, which were reviewed by Indiana SHPO, were considered in the selection of Refined Preferred Alternative 8 (see **Section 5.14.2.2**, *Area of Potential Effects*).

Substantive portions of Alternatives 4 and 5 were surveyed in 2006-2007, including most areas from the southern end of Section 5 northward to an area a short distance north of West Sample Road. Several tilled fields near Godsey Road and Liberty Church Road also were surveyed at that time. Because of scheduling and location modifications to the I-69 Section 5 project, only a portion of the corridor was archaeologically surveyed. Extensive background information and results of the 2006-2007 survey were incorporated into the initial *Phase Ia Archaeological Report* for Section 5 (submitted to SHPO April 18, 2012). This report noted 24 previously identified sites within the Section 5 study corridor during the background research, and 41 newly identified archaeological sites (see **Appendix N**, *Section 106 Documentation* for the management summary from that report). The results of this investigation recommended additional Phase Ib background research for historic sites 12Mo1401, 12Mo1415, and

12Mo1430 to help evaluate those sites for NRHP eligibility and Phase II testing of 12Mo1413 if the site could not be avoided.

In June-August 2012, additional Phase Ia archaeological survey was conducted in previously unsurveyed portions of the I-69 Section 5 corridor. This survey focused on Alternatives 4 through 8, which included much overlapping area. All of the project alternatives include the areas currently occupied by SR 37 throughout the corridor. In addition, the Phase Ib investigations were completed during the June-August 2012 fieldwork which resulted in a recommendation of no further work for any of the three sites (12Mo1401, 12Mo1415, and 12Mo1430). The addendum reconnaissance also newly identified and assessed 41 additional prehistoric and historic archaeological sites resulting in a recommendation of Phase II testing or avoidance of sites 12Mg456 and 12Mo1442. Further, the report recognized that while site 12Mo1416 is not individually eligible for the NRHP, it contributes to the eligible North Clear Creek Historic Landscape District. The results of this investigation were incorporated into the *Addendum I: Phase Ia and Ib Archaeological Survey that* was delivered to SHPO on October 26, 2012.

In November 2012, a third survey of additional right-of-way was conducted. One additional archaeological site was identified and assessed as not eligible to the NRHP. The *Addendum II: Phase Ia Archaeological Survey* was submitted to the SHPO on March 12, 2013.

SHPO's response letters to these reports (May 14, 2012; November 19, 2012; and April 9, 2013) provided consultants with concurrence and direction regarding which sites have the potential to be NRHP eligible, and which sites may need Phase Ic and/or Phase II testing prior to the Record of Decision (ROD) where possible. In addition to concurring with the recommendations for Phase II testing at sites 12Mg456 and 12Mo1442, SHPO also recommended site 12Mg450 "be subjected to Phase Ic investigations if it cannot be avoided by all project activities." (see **Appendix N**, *Section 106 Documentation* for the management summaries from these reports and for copies of correspondence).

In 2013, project archaeologists will complete the Phase Ia survey for any areas of the archaeology APE within Refined Preferred Alternative 8 that have not yet been surveyed. Once the Phase Ia survey of the remainder of the archaeology APE is complete, an addendum to the Phase Ia report will be submitted to SHPO with the additional survey results. At that time, project archaeologists will recommend either no further work or additional evaluation.

Where potentially eligible archaeological sites cannot be avoided by the project alternatives, Phase Ic and Phase II investigations will be conducted to determine NRHP eligibility. Commitments for the completion of Phase Ic and Phase II investigations and any subsequent phases of archaeological investigation have been incorporated into a MOA between FHWA, the Indiana SHPO, the Advisory Council on Historic Preservation (ACHP) and the Indiana Department of Transportation (INDOT) (included in **Appendix N**, S*ection 106 Documentation*). If the results of this additional testing show that a Phase III is warranted, that work will be completed before construction on the project begins at that site.

Table 5.14-1 summarizes the phases and schedule for accomplishing the archaeological work in Section 5.

Table 5.14-1: Phases of Archaeological Research in Section 5

Phase	Work Completed	Section 106 Step	Schedule	Deliverable
Ia literature review	Archival research and site files check for study corridor (2,000 feet)	Research design and identification	Before DEIS (inform selection of Preferred Alternative)	Technical report
Ia field research	Survey of Archaeological APE alternatives right-of-way	Identification	Before FEIS	Technical report/ results summarized in FEIS
Ib	Intensive survey of site	Eligibility clarification for questionable sites	Before FEIS	Technical report/ results summarized in FEIS
Ic	Subsurface Reconnaissance	Identification of buried sites	Before FEIS when possible	Technical report/ results summarized in FEIS where possible
II	Site evaluation	Determination of NRHP Eligibility	Before ROD when possible	Technical report/ results summarized in FEIS where possible
MOA	Develop plan outlining FHWA responsibilities and schedule for Section 106 completion	Mitigation of Adverse Effects	In FEIS, if necessary	MOA
III	Data recovery of site	Mitigation of NRHP eligible sites	Following ROD but before construction	Technical report issued for each site subject to data recovery

5.14.2.1 Consultation Process

Section 106 consultation pertaining to archaeological resources was conducted in conjunction with consultation for above ground resources. The timeline and results of the consultation process for Section 5 are detailed in **Section 5.13.2.1**, *Consultation Process*. Topics specific to archaeological resources discussed at the Section 5 consulting parties meetings focused on the phased research approach. The Tier 1 MOA was reviewed, and it was noted that the archival research and site file reviews focused on the study corridor. Consulting parties were informed that the Phase Ia surveys of the alternatives' rights-of-way has been started and would be completed in accordance with the INDOT's standard practice for NEPA studies (described in the *Procedural Manual for Preparing Environmental Studies* [INDOT, December 2004], and promulgated by INDOT). Documentation associated with consulting party meetings (invitations, agenda, minutes, etc.) is contained in **Appendix N**, *Section 106 Documentation*.

5.14.2.2 Area of Potential Effects

One of the first steps in the Section 106 process is to define the APE. The APE is "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. The APE is influenced by the scale and nature of an undertaking…" (36 CFR §800.9(a)).

The APE for archaeological resources, per 36 CFR §800.16(d), was defined, through consultation with the Indiana SHPO, as the right-of-way for the Refined Preferred Alternative 8, which is comprised of portions of Alternatives 4, 5, 6, 7, and 8. It includes the heavily disturbed existing SR 37 right-of-way. As previously noted, in 2006-2007, Phase Ia field studies were conducted within the rights-of-way of Alternatives 4 and 5. In 2012, field studies were conducted within the remaining portions of Alternatives 4 and 5, and within the overlapping portions of the rights-of-way for Alternatives 6, 7, and 8. The Refined Preferred Alternative 8, delineated at the beginning of 2013, resulted in slight changes to the archaeological APE. Minor shifts in the proposed right-of-way created several small areas where the Phase Ia archaeological survey has not taken place. In Section 5, the right-of-way for the preferred alternative (Refined Alternative 8) averages approximately 500 feet; however, the right-of-way widths vary from about 260 feet to over 790 feet depending upon the alignment, terrain features, and local access treatments.

5.14.2.3 Research Methods

As part of the phased approach to Tier 2 archaeological studies, research for alternatives in the project study corridor consisted of a literature search, IDNR-DHPA site files check, and archival research. Site recordation forms for all sites were copied and site locations marked on project maps and entered into the Section 5 project Geographic Information System (GIS). The sites were considered in the alternative selection process described in this document.

Research for the FEIS included Phase Ia field surveys for portions of Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8. All of the alternatives include the areas currently occupied by SR 37 through the Study Corridor. All portions of the archaeological APE have been surveyed for archaeological resources through the 2006-2007 and 2012 field investigations. The completed Phase Ia and Ib field investigations employed a combination of field methods, reflecting small changes in the IDNR-DHPA guidelines between those two periods of fieldwork, as well as variable field conditions and objectives.

While each of the alternatives includes the existing SR 37 right-of-way corridor, most of that existing corridor has not and will not be surveyed for archaeological resources as part of the I-69 Section 5 studies. The vast majority of the existing SR 37 right-of-way corridor has been heavily disturbed by roadway construction and maintenance activities that would have destroyed archaeological deposits. The field methods used in the existing SR 37 corridor confirm prior disturbance and comply with field methods approved by the DHPA and INDOT.

Shovel Testing

Shovel testing was utilized in areas where ground surface visibility was less than 30% and the areas were not heavily disturbed. Heavily disturbed areas, such as deep cut and fill areas, as well as paved and poured concrete areas, were not shovel test probed. This method consists of excavating 30-centimeter-diameter shovel tests at 10-meter or 15-meter intervals (the intervals were decreased to 5 meters when delineating the perimeter of an archaeological site). Intervals of 30 meters were used in instances to confirm existing disturbances such as road shoulders and residential landscaped yards. Shovel tests were excavated to a depth that penetrated subsoil by a depth of 10 centimeters or the maximum possible depth. The fill from these shovel tests was screened through 0.25-inch hardware cloth, and all artifacts encountered were collected and provenienced to the shovel test and in relation to the soil horizons. A record was kept for all shovel tests excavated. This record includes soil profile, soil texture, soil color (Munsell), and presence/absence of cultural materials. Landform boundaries, negative shovel probes, or project area limits determined recorded site boundaries. In areas of subsurface disturbance, the interval between shovel tests was increased or soil coring was substituted at the discretion of the field supervisor. Notes were taken for each site and include observations, methods of investigation, site size, and slope gradient and direction. All site boundaries were recorded by GPS to sub-meter accuracy.

Surface Survey/Collection

In areas where the ground surface permitted at least 30% visibility, surface collection/survey was utilized. In most of these areas, the tilled fields exhibited ground surface visibility exceeding 80%. This method consists of visually examining the ground surface at a maximum of 10-meter intervals. Once cultural materials were discovered, intervals no greater than 5 meters were utilized in the site area and its vicinity. Typically, one or more shovel tests were excavated in the sites identified during the surface collection to better characterize soil conditions and artifact distributions in those site areas. All artifacts located in the field were bagged, with the date and provenience marked on the bag.

Visual Inspection

Areas of obvious physical disturbance and steep slopes were visually inspected. In undeveloped areas this consisted of a walkover at 10-meter intervals. Field notes and map notations were employed to record area designations, field conditions, located sites, and methods of investigation. The results of the Phase Ia investigations for the surveyed portions of Section 5 Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8 are presented in **Section 5.14.3**, *Summary of Archaeological Resources in Surveyed Portions of Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8*.

5.14.3 Summary of Archaeological Resources in Surveyed Portions of Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8

The 2006-2007 Phase Ia archaeological investigations within portions of the Section 5 APE in Alternatives 4 and 5 identified 41 previously unrecorded archaeological sites. The sites

included: 12 prehistoric isolated finds, 18 prehistoric artifact scatters, 8 multicomponent prehistoric/historic scatters, and 3 historic sites. The identified historic components included remains from four diminutive field scatters, four domestic sites, the remains of one barn, a stone marker, and a railroad spur system. The 41 sites identified during the 2006-2007 archaeological investigations are summarized in **Table 5.14-2**, generally from south to north.

Site 12Mo1413 was recommended for Phase II investigations. Phase Ib background research was recommended for three historic sites, 12Mo1401, 12Mo1415, and 12Mo1430, to provide information to evaluate those sites. While individually evaluated as not NRHP-eligible, the Maple Hill Quarry Railroad Spurs (14Mo1416) were evaluated as contributing to an associated limestone quarry, the NRHP-eligible North Clear Creek Historic Landscape District.

In the summer of 2012 (June through August), investigations for previously unsurveyed portions of the I-69 Section 5 corridor identified 41 additional sites. In the fall of 2012, one additional site was identified for a total of 83 archaeological sites. The 42 newly identified sites include 29 that yielded only prehistoric artifacts, 11 multicomponent prehistoric/historic artifact scatters, one that contained only historic artifacts, and a historic well. The results of the 2012 Phase Ia archaeological surveys have been incorporated into the *Addendum I* and *Addendum II: Phase Ia Archaeological Surveys of the I-69 Evansville-to-Indianapolis Study, Section 5 (from SR 37 to SR 39), Monroe and Morgan Counties, Indiana* (October 26, 2012, and March 2013). (See **Appendix N**, *Section 106 Documentation*, for summaries of the reports.)

Of all the surveyed sites, one site is a Contributing element to the North Clear Creek Historic Landscape District (12Mo1416), but is located outside the Refined Preferred Alternative 8 right-of-way limits. Three sites are potentially eligible for listing in the NRHP (Site 12Mo1442 is located partially within the Refined Preferred Alternative 8 right-of-way; sites 12Mg456 and 12Mo1413 are located in proximity to the right-of-way). If unavoidable, the sites that are potentially eligible will be subjected to Phase II testing, per a work plan submitted to, and approved by, the SHPO. A report of the investigation will be submitted to SHPO for review and comment. Eleven sites have insufficient data for eligibility determination (12Mo1401, 12Mg467, 12Mg458, 12Mo1432, 12Mo1434, 12Mo1435, 12Mo1444, 12Mo1445, 12Mo1450, 12Mo1451, and 12Mo1452). The portions of these 11 sites within the Refined Preferred Alternative 8 right-of-way limits did not contain significant archaeological deposits. Therefore, additional archaeological investigations were not recommended at these sites. The portions outside the right-of-way were recommended for avoidance or additional study. There was also insufficient information regarding archaeological site 12Mg450. However, given its location, Phase Ic testing is recommended for Site 12Mg450 if it cannot be avoided by the project. The remaining 67 identified archaeological sites have been recommended as not eligible for listing in the NRHP. In addition, 19 alluvial floodplain test areas were identified for Phase Ic archaeological investigations.

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
Phase Ia Archaeological Survey Report (April 2012): Monroe County						
12Mo1416	None recovered	Historic railroad spurs	Length of about 1,770 (5,807 FT)	Generally a gentle Hillside	Crosses a stream	Contributes to the North Clear Creek Historic Landscape District, which is elig ble for the NRHP.
12Mo1415	None recovered; terminal historic and modern house construction debris was observed	Late historic house remains (ca. 1950-2000)	38 x 50	Watershed Ridge Crest	400 (1,312) South	Phase Ib intensive survey recommended to gather more background data to aid in site evaluation. After Phase Ib survey (Summer 2012), the site was recommended as not elig ble.
12Mo1387	1 Block Shatter 4 Broken Flakes 1 Proximal Flake 1 Whole Flake 1 Expedient Tool	Unknown Prehistoric	15 x 30	Watershed Ridge Crest	457 (1,500) South	Not eligible – No further work
12Mo1388	3 Block Shatter 1 Whole Flake	Unknown Prehistoric	5 x 10	Upland Flats	701 (2,300) South-Southeast	Not eligible – No further work
12Mo1389	29 Block Shatter 9 Broken Flakes 1 Proximal Flake 2 Whole Flakes	Unknown Prehistoric	30 x 60	Upland Flats	549 (1,800) South	Not eligible – No further work
12Mo1390	1 Block Shatter 1 Prehistoric Pottery shard	Woodland Period or Later	5 x 10	Upland Flats	305 (1,000) South	Not eligible – No further work
12Mo1430	Limestone marker engraved “POSEY / JULY 2”	Late historic or modern stone marker	Isolated Find	Hillside	610 (2,000) East-Northeast	Phase Ib intensive survey recommended to gather more background data to determine the purpose of this marker. After Phase Ib survey (Summer 2012), the site was recommended as not elig ble.
12Mo1391	1 Whole Flake	Unknown Prehistoric	Isolated Find	Watershed Knob	594 (1,950) East-Northeast	Not eligible – No further work
12Mo1392	1 Block Shatter 1 Proximal Flake	Unknown Prehistoric	5 x 10	Hillside	823 (2,700) East-Northeast	Not eligible – No further work

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mo1393	30 Block Shatter 4 Broken Flakes 1 Whole Flake	Unknown Prehistoric	35 x 45	Hillside	823 (2,700) South	Not eligible – No further work
12Mo1394	4 Broken Flakes 1 Core 1 Expedient Tool 10 Historic Ceramics 1 Glass Fragment 17 Metal Artifacts	Unknown Prehistoric, Ca. 1900-2000	45 x 90	Upland Flats	853 (2,800) Southwest	Not eligible – No further work
12Mo1395	1 Broken Flake	Unknown Prehistoric	Isolated Find	Upland Flats	945 (3,100) Southwest	Not eligible – No further work
12Mo1396	2 Block Shatter 1 Broken Flake 1 Whole Flake	Unknown Prehistoric	8 x 15	Upland Flats	701 (2,300) North	Not eligible – No further work
12Mo1397	1 Broken Flake 1 Proximal Flake 1 Flake 1 Core	Unknown Prehistoric	8 x 35	Upland Flats	610 (2,000) North	Not eligible – No further work
12Mo1398	2 Block Shatter 1 Proximal Flake	Unknown Prehistoric	5 x 10	Upland Flats	579 (1,900) North	Not eligible – No further work
12Mo1399	5 Block Shatter 1 Proximal Flake	Unknown Prehistoric	Single STP	Upland Flats	594 (1,950) West	Not eligible – No further work
12Mo1400	1 Proximal Flake 5 Glass Fragments 6 Nails 1 1905 Cent	Unknown Prehistoric, Post-1907/1908	10 x 35	Upland Flats	540 (1,772) West	Not eligible – No further work
12Mo1401	1 UID PPK 1 Fox Valley Truncated Barb PPK 9 Historic Ceramics 3 Glass Fragments 2 Metal Artifacts 1 Porcelain Button	Early Archaic, Mid 19th-Mid 20th Century	18 x 75	Hillside	290 (950) Northwest	Phase Ib intensive survey recommended to gather more background data to aid in site evaluation. After Phase Ib survey (Summer 2012), the western portion of site was recommended potentially eligible. Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1402	1 Broken Flake 1 Proximal Flake	Unknown Prehistoric	Single STP	Upland Flats	290 (950) Northwest	Not eligible – No further work
12Mo1403	1 Broken Flake	Unknown Prehistoric	Isolated Find	Hillside	320 (1,050) Northwest	Not eligible – No further work

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mo1404	2 Broken Flakes 1 Stoneware Sherd	Mixed Unknown Prehistoric and Historic	5 x 15	Watershed Ridge Crest	274 (900) Southwest	Not eligible – No further work
12Mo1405	4 Broken Flakes 2 Proximal Flakes 1 Biface Fragment 1 Poss ble Feature	Unknown Prehistoric	15 x 41	Upland Flats	343 (1,125) Southwest	Not eligible – No further work
12Mo1406	1 Broken Flake	Unknown Prehistoric	Isolated Find	Hillside	457 (1,500) Southwest	Not eligible – No further work
12Mo1407	23 Broken Flakes 6 Proximal Flakes 3 Whole Flakes 1 Bipolar Fragment 1 Charleston Corner Notched PPK 1 Glass Shard	Early Archaic, Late 19th-Early 20th Century	30 x 70	Upland Flats	549 (1,800) Southwest	Not eligible – No further work
12Mo1408	2 Broken Flakes	Unknown Prehistoric	5 x 10	Upland Flats	579 (1,900) Northwest	Not eligible – No further work
12Mo1409	10 Broken Flakes 9 Proximal Flakes 4 Whole Flakes 1 Flake 1 UID PPK 1 Whiteware Sherd 1 Cut Nail	Mixed Unknown Prehistoric and Historic	60 x 70	Upland Flats	549 (1,800) Northwest	Not eligible – No further work
12Mo1410	1 Expedient Tool	Unknown Prehistoric	Isolated Find	Upland Flats	183 (600) Northwest	Not eligible – No further work
12Mo1411	3 Broken Flakes 2 Proximal Flakes 1 Whole Flake 1 Biface Fragment 1 UID Bone Frag.	Unknown Prehistoric	25 x 45	Upland Flats	396 (1,300) North-Northwest	Not eligible – No further work
12Mo1412	2 Block Shatter 2 Broken Flakes	Unknown Prehistoric	5 x 27	Upland Flats	290 (950) Northwest	Not eligible – No further work
12Mo1413	1 Broken Flake 72 Historic Ceramics 63 Glass Shards 29 Metal Artifacts 1 Porcelain Button 1 Historic Feature	Unknown Prehistoric, Mid 19th-Early 20th Century	15 x 45	Hillside	122 (400) South	Potentially eligible; Phase II testing if the site is not avoided by the project.
12Mo1414	1 Broken Flake 1 Glass Shard	Mixed Unknown Prehistoric and Historic	5 x 10	Watershed Ridge Crest	427 (1,400) North	Not eligible – No further work
Phase Ia Archaeological Survey Report (April 2012): Morgan County						
12Mg437	1 Whole Biface	Unknown Prehistoric	Isolated Find	T-1 Flats	305 (1,000) South	Not eligible – No further work
12Mg438	1 Broken Flake 1 Core	Unknown Prehistoric	5 x 10	T-1 Flats	305 (1,000) Southwest	Not eligible – No further work
12Mg439	1 Proximal Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	274 (900) Southwest	Not eligible – No further work
12Mg440	1 Broken Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	335 (1,100) North-Northeast	Not eligible – No further work

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mg441	1 Proximal Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	274 (900) North-Northeast	Not eligible – No further work
12Mg442	1 Broken Flake 1 Core	Unknown Prehistoric	5 x 10	T-1 Flats	320 (1,050) North-Northeast	Not eligible – No further work
12Mg443	1 Whole Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	183 (600) North-Northeast	Not eligible – No further work
12Mg444	1 Broken Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	91 (300) North	Not eligible – No further work
12Mg445	2 Proximal Flake 1 Whole Flake 2 Expedient Tools 1 Bipolar Artifact	Unknown Prehistoric	15 x 20	T-1 Flats	91 (300) North	Not eligible – No further work
12Mg446	1 Broken Flake	Unknown Prehistoric	Isolated Find	T-1 Flats	274 (900) Northeast	Not eligible – No further work
Addendum I: Phase Ia and Ib Archaeological Survey Report (October 2012): Monroe County						
12Mo1432	1 Broken Flake	Prehistoric Unknown	Isolated Find	Bluff Base	780 (2,558) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1433	14 Broken Flakes 7 Proximal Flakes 1 Whole Flake	Prehistoric Unknown	25 x 30	Bluff Base	600 (1,968) West	Not eligible
12Mo1434	2 Broken Flakes 3 Proximal Flakes 3 Historic Ceramics 1 Cut Nail	Mixed Unknown Prehistoric and Historic	3.5 x 9	Upland Flats	95 (312) North	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1435	1 Broken Flake	Prehistoric Unknown	Isolated Find	Bluff Base	170 (230) North	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mo1436	1 Lithic Anvil 1 Chipped Stone Tool 7 Broken Flakes 1 Flake Fragment 2 Proximal Flakes 4 Whole Flakes	Prehistoric Unknown	20 x 55	Watershed Ridge Crest	410 (1,345) Southwest	Not eligible
12Mo1437	3 Broken Flakes 2 Flake Fragments 6 Proximal Flakes 1 Stoneware Sherd	Mixed Unknown Prehistoric and 20th Century Historic	40 x 65	Watershed Ridge Crest	290 (951) Southwest	Not eligible
12Mo1438	1 Broken Flake 1 Flake Fragment	Prehistoric Unknown	Isolated Find	Watershed Ridge Crest	350 (1,148) Southwest	Not eligible
12Mo1439	1 Biface 1 Core 1 End Scraper 1 UID Lithic Tool 6 Broken Flakes 4 Flake Fragments 3 Proximal Flakes 1 Whole Flake	Prehistoric Unknown	20 x 47	Watershed Ridge Crest	300 (984) Southwest	Not eligible
12Mo1440	1 Biface 1 Broken Flake	Prehistoric Unknown	5 x 15	Terrace Flats	750 (2,460) East	Not eligible
12Mo1442	1 Biface 2 Cores 87 Broken Flakes 19 Flake Fragments 47 Proximal Flakes 20 Whole Flakes 2 Shatter 3 FCR 1 Slag	Prehistoric Unknown	185 x 75	Upland Flats	307 (1,007) Northeast	Potentially eligible; Phase II testing if the site is not avoided by the project.
12Mo1443	1 Whiteware Sherd	Ca. 1820-early 1900s	Isolated Find	Watersehd Ridge Crest	550 (1,804) West	Not eligible
12Mo1444	1 Core 2 Broken Flakes 1 Whole Flake 1 Glass Artifact 2 Metal Artifacts	Prehistoric Unknown, ca. 1875-1920	15 x 30	Upland Flats	560 (1,837) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mo1445	8 Broken Flakes 9 Flake Fragments 7 Proximal Flakes 3 Whole Flakes 1 Whiteware Sherd	Mixed Unknown Prehistoric and Historic	45 x 95	Top of Bluff	660 (2,165) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1446	1 Biface 1 Bipolar Artifact 3 Cores 21 Broken Flakes 12 Flake Fragments 10 Proximal Flakes 4 Historic Ceramics 1 Glass Fragment	Mixed Unknown Prehistoric and Historic	25 x 45	Talus	420 (1,378) Northeast	Not eligible
12Mo1447	2 Broken Flakes 1 Proximal Flake 1 Whole Flake	Prehistoric Unknown	25 x 45	Talus	370 (1,214) Northeast	Not eligible
12Mo1448	1 Expedient Tool	Prehistoric Unknown	Isolated Find	Upland Flats	566 (1,856) West	Not eligible
12Mo1449	1 Broken Flake	Prehistoric Unknown	Isolated Find	Top of Bluff	560 (1,837) West	Not eligible
12Mo1450	1 Brewerton Side Notched PPK 1 Core 14 Broken Flakes 2 Flake Fragments 8 Proximal Flakes 4 Whole Flakes 8 Brick Fragments	Late Archaic, Historic Unknown	45 x 45	Top of Bluff	550 (1,804) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1451	1 Broken Flake	Prehistoric Unknown	Isolated Find	Top of Bluff	545 (1,788) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mo1452	4 Broken Flakes 3 Flake Fragments 1 Whole Flake	Prehistoric Unknown	45 x 50	Top of Bluff	484 (1,588) West	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mo1453	4 Broken Flakes 1 Flake Fragment 3 Whole Flakes 4 Whiteware Sherds	Mixed Unknown Prehistoric and Historic	30 x 85	Top of Bluff	447 (1,466) West	Not eligible
Addendum I: Phase Ia and Ib Archaeological Survey Report (October 2012): Morgan County						
12Mg448	1 Proximal Flake	Unknown Prehistoric	Isolated Find	Bluff Base	314 (1,030) South	Not eligible
12Mg449	4 Broken Flakes 2 Proximal Flakes 1 Whole Flake 12 Brick Fragments 1 Whiteware Sherd 3 Glass Fragments 21 Nails 24 Asbestos Siding 3 Construction Debris	Unknown Prehistoric, Historic 19th-20th century structure related artifacts	23 x 54	Bluff Base	290 (951) South	Not eligible
12Mg450	2 UID PPKs 1 McWhinney Heavy Stemmed-l ke PPK 1 Expedient Tool 1 Bipolar Artifact 2 Broken Flakes 5 Proximal Flakes 7 Whole Flakes 1 FCR	Late Archaic	40 x 123	T-1 Flats	405 (1,328) Northeast	Phase Ic testing is recommended for Site 12Mg450 if it cannot be avoided by the project.
12Mg451	1 Whole Flake	Prehistoric Unknown	Isolated Find	T-1 Flats	67 (220) Southeast	Not eligible
12Mg452	2 Broken Flakes 1 Flake Fragment 2 Proximal Flakes 1 Whole Flake 1 Whiteware Sherd	Mixed Unknown Prehistoric and Historic	15 x 20	T-1 Flats	89 (292) Southeast	Not eligible
12Mg453	2 Whole Flakes 1 FCR	Prehistoric Unknown, 20th Century Historic	15 x 20	T-1 Flats	188 (617) Southeast	Not eligible
12Mg454	1 Core 1 Expedient Tool 9 Broken Flakes 2 Proximal Flakes 2 Whole Flakes 4 Stoneware Sherds	Mixed Unknown Prehistoric and 20th Century Historic	48 x 60	T-1 Flats	130 (426) Southeast	Not eligible
12Mg455	1 Proximal Flake 1 Whole Flake	Prehistoric Unknown	15 x 33	Bluff Base	25 (82) South	Not eligible
12Mg456	2 UID PPKs 1 Biface 1 Expedient Tool 24 Broken Flakes 3 Flake Fragments 9 Proximal Flakes 9 Whole Flakes 4 Shatter 15 FCR	Prehistoric Unknown	82.5 x 112.5	T-1 Flats	120 (394) North	Potentially eligible; Phase II testing if the site is not avoided by the project.
12Mg457	1 Proximal Flake	Prehistoric Unknown	Isolated Find	T-1 Flats	160 (525) North	Not eligible

Table 5.14-2: Summary of Archaeological Sites Identified

Site Number	Artifacts	Site Type	Site Size in M	Landform	Distance and Direction to Water in M (FT)	Recommendations
12Mg467	2 Bifaces 1 Expedient Tool 2 Proximal Flakes 3 Whole Flakes	Prehistoric Unknown	11 x 29	T-1 Flats	180 (590) Northeast	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mg458	1 Core 3 Broken Flakes	Prehistoric Unknown	5 x 12	T-1 Flats	96 (315) Northeast	Portion of site within the I-69 Section 5 Refined Preferred Alternative 8 does not contain significant archaeological deposits, and no further work is recommended for those portions.
12Mg459	1 Broken Flake 2 Whole Flakes	Prehistoric Unknown	15 x 45	T-1 Flats	130 (426) Northeast	Not eligible
12Mg460	1 Broken Flake 2 Brick Fragments 9 Historic Ceramics 22 Glass Artifacts 13 Metal Artifacts	Prehistoric Unknown, 19th-20th Century Historic	25 x 78	T-1 Flats	108 (354) Southeast	Not eligible
12Mg461	1 Madison PPK 1 Lithic Drill 1 Core 8 Broken Flakes 1 Proximal Flake 5 Whole Flakes 1 UID Flake	Late Woodland	25 x 40	Upland Rise	56 (184) Southeast	Not eligible
12Mg462	1 Broken Flake	Prehistoric Unknown	Isolated Find	Upland Rise	30 (98) South	Not eligible
12Mg463	None	Historic Well	Isolated Find	Upland Rise	10 (33) North	Not eligible
12Mg464	2 Broken Flakes 3 Proximal Flakes 2 Whole Flakes	Prehistoric Unknown	11 x 46	Hillside	550 (1,804) Southwest	Not eligible
12Mg465	1 Whole Flake	Prehistoric Unknown	Isolated Find	Bluff top head of gully	495 (1,624) South	Not eligible
12Mg466	1 Whole Flake	Prehistoric Unknown	Isolated Find	Bluff top ridge spur	260 (853) South	Not eligible
Addendum II: Phase Ia and Ib Archaeological Survey Report (March 2013): Monroe County						
12Mo1468	1 proximal flake 1 whiteare sherd	Unknown Prehistoric Unknown Historic	15 x 5	Upland Flat	2.6 km (1.6 mi)	Not eligible

5.14.4 Mitigation

Per 36 CFR §800.5(a)(1), an adverse effect is defined as a direct or indirect alteration to NRHP-eligible resources through a federal undertaking. Adverse effects of an undertaking, as related to archaeological resources, generally involve partial or complete destruction of a site. On October 11, 2012, FHWA signed a Finding of Effects for Section 5 of the I-69 Evansville to Indianapolis Study: **Historic Properties Affected – Adverse Effect**, since a potential existed for an adverse effect because not all of the archaeological identification and evaluation efforts were completed. The SHPO concurred with the Adverse Effect finding on November 21, 2012. For detailed information, see the *Identification of Effects Report* and the 800.11(e) documentation in **Appendix N,** *Section 106 Documentation,* of this document.

Through the archaeological studies, three sites were recommended as potentially eligible for listing in the NRHP (Site 12Mo1442 is located partially within the Refined Preferred Alternative 8 right-of-way; sites 12Mg456 and 12Mo1413 are located in proximity to the right-of-way). If unavoidable, the sites that are potentially eligible will be subjected to Phase II testing, the results of which will be submitted to SHPO for review and comment. Eleven sites have insufficient data for eligibility determination (12Mo1401, 12Mg467, 12Mg458, 12Mo1432, 12Mo1434, 12Mo1435, 12Mo1444, 12Mo1445, 12Mo1450, 12Mo1451, and 12Mo1452). The portions of these 11 sites within the Refined Preferred Alternative 8 right-of-way limits did not contain significant archaeological deposits. Therefore, additional archaeological investigations were not recommended at these sites. The portions outside the right-of-way were recommended for avoidance or additional study.

One site was recommended for Phase Ic testing, due to its location (12Mg450). Nineteen alluvial floodplain test areas (in the vicinities of Little Indian Creek, Jordan Creek, Buckner Branch, Beanblossom Creek and Bryant Creek) were identified for Phase Ic archaeological investigations. Once additional studies are conducted on these sites, a determination can be made as to the NRHP eligibility of each. All of these archeological sites are considered to be chiefly important for what information can be gained through data recovery and have little value for preservation in place.

Commitments for the completion of additional archaeological investigations at these sites are included in an MOA (see **Appendix N**, *Section 106 Documentation*). The MOA also includes general mitigation as part of a larger mitigation stipulation for the I-69 corridor that was provided for in the I-69 Tier 1 MOA.

If the results of further archaeological testing show that additional archaeological investigations or mitigation would be warranted, that work would be completed, in consultation with the Indiana SHPO and any appropriate consulting parties (for example, Native American tribes for prehistoric sites), before construction of the project could begin in those areas. Should any archeological discoveries be made that are subject to Section 4(f), these sites will be considered pursuant to 23 CFR §774.9(e).

5.14.5 Summary

Section 106 of the NHPA of 1966, as amended, mandates that federal agencies consider the effects of their actions on historic properties, including archaeological resources. For Tier 2 of the I-69 project, a phased approach has been developed to accomplish this task. The literature review and research phase has been completed.

A Phase Ia archaeological survey has been completed for the Section 5 Refined Preferred Alternative 8 APE (comprised of portions of Alternatives 4 through 8) to identify whether NRHP-eligible archaeological resources are located within the APE and to determine what effect the proposed I-69 undertaking could have on those resources. The APE was investigated through shovel testing, surface collection/survey, and visual inspection. Phase Ia archaeological research identified 83 sites within the APEs for Alternatives 4, 5, 6, 7, 8, and Refined Preferred Alternative 8 (see **Table 5.14-2**). Three sites were determined potentially eligible for listing in the NRHP, 11 sites had insufficient data for eligibility determination, one site was recommended for Phase Ic testing, and 19 alluvial floodplain test areas were identified for Phase Ic archaeological investigations.

On October 11, 2012, FHWA signed a Finding of Effects for Section 5 of the I-69 Evansville to Indianapolis Study: **Historic Properties Affected – Adverse Effect**, since a potential existed for an adverse effect with not all archaeological identification and evaluation efforts completed. The SHPO concurred with the Adverse Effect finding on November 21, 2012.

On February 11, 2013, FHWA notified the ACHP of its findings and determinations, submitted documentation regarding the status of the archaeological surveys and draft MOA and invited ACHP's participation in consultation. On February 26, 2013, ACHP informed FHWA that it would participate in consultation under Section 106 to develop a MOA for the project. The ACHP sent a second letter to FHWA on April 15, 2013, indicating that "the revised MOA accurately reflects our understanding of changes agreed upon as a result of these discussions." They provided suggested revisions to the MOA, including correction of a typographical error, clarification of language within clauses and stipulations to clarity and intent. (See **Appendix N**, *Section 106 Documentation*, for a copy of the final MOA.)

Project consultants sent an electronic copy of the revised MOA to the signatories and invited signatories on April 23, 2013. The letter requested careful consideration of the provided text, and promised a paper copy of the MOA, for signature, would be delivered shortly. The MOA was signed by all signatories on May 9, 2013; other consulting parties will be invited to sign as concurring parties. The executed MOA will be distributed to signatories and consulting parties along with the final copy of the 800.11(e) documentation (36 CFR 800.6[a][3]).

5.15 Mineral Resource Impacts

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8 " The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8." Since the publication of the DEIS, the impacts from Refined Preferred Alternative 8 were added to this section.

5.15.1 Introduction

Mineral resources in Southwest Indiana include such diverse materials as limestone, oil, gas, coal, shale, sand, gravel, and gypsum. These minerals have many uses, such as providing electricity for homes and offices; energy for transportation, and heating/cooling for residents and businesses; and building products. Building products include cement products from shale, asphalt paving bitumens from crude oil, and limestone premium aggregate products.

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. The resource impacts in this chapter show which mineral resources impacted are within the existing rights-of-way for SR 37 and other transportation facilities.

5.15.2 Methodology

Mineral resources were reviewed in this study using the project's Geographic Information System (GIS). Each alternative within the corridor was analyzed using GIS layers for mineral resources. The resources crossed by the alternatives were calculated and summarized for the following mineral resources: limestone, oil, natural gas, and sand and gravel. **Table 5.15-1** on the following page identifies the potential impacts of the alternatives on mineral resources in the project corridor. **Figure 5.15-1** shows an abandoned limestone quarry operation typical of the project area. (Figures are located at the end of this chapter.) **Figure 5.15-2** provides a general overview of potentially marketable limestone,[1] oil, natural gas, and sand and gravel resources in and near the project corridor. **Figure 5.15-3** shows an active minerals site (limestone mill / former quarry) adjacent to the Section 5 corridor.

[1] Limestone is considered potentially marketable from the Blue River Group and the Sanders Group of limestone within the corridor from the southern terminus to approximately Kinser Pike and from approximately Wayport Road to the vicinity of Chambers Pike. This is based on the quality of the limestone in the area and the shallow depth and potential surface accessibility to the limestone resource. For this analysis, potential marketability does not take into consideration current market conditions or the current status of proven marketable reserves.

Table 5.15-1: Mineral Resources Potentially in Right-of-Way of Alternatives

Karst Feature Type	Quantity Type	Build Alternatives					
		4	5	6	7	8	Refined Preferred Alternative 8
Potentially Marketable Limestone[a] (acres)	Area (acres)	996	959	742	731	766	772
Potentially Marketable Limestone[a] minus overlying developed land cover (acres)	Area (acres)	301	273	141	129	149	148
	Percent of total	30%	29%	19%	18%	19%	19%
Abandoned Limestone Quarries[b]	No. of Features	3	3	3	3	3	3
Active Limestone Quarries[c]	No. of Features	1	1	1	0	1	1
	Area (acres)	9	9	2	0	2	2
Active Oil/Gas Wells	No. of Features	0	0	0	0	0	0
Abandoned/Dry Oil/Gas Wells	No. of Features	0	0	0	0	0	0
Sand and Gravel Resources (High Potential)	Area (acres)	41	43	30	30	30	30

Source: GIS layer titled Natural Regions SW, Coal Availability DA SW, Coal Availability SP SW; the Indiana Geological Survey (IGS) layers titled Petroleum Fields and Bedrock Geology; and Well Locations exported from the IGS Petroleum Database Management System (PDMS)

Notes:

[a] Potentially Marketable Limestone consists of Blue River Group (St. Louis and Ste. Genevieve) Limestone and Sanders Group (Salem and Harrodsburg/Ramp Creek Formation) Limestone in Monroe County. Developed land cover includes existing SR 37, as well as other transportation facilities and structures (buildings).

[b] While the Indiana Map (http://www.indianamap.org/) shows three abandoned quarries at the existing SR 37 and SR 46 interchange, these impacts have already occurred as part of previous construction projects and are not included in the Section 5 alternative impacts.

[c] Impacts were based upon Monroe County GIS "Mine or Quarry" Property Class.

5.15.3 Analysis

5.15.3.1 Coal

There are no known areas of significant coal mining or active coal mines, and future coal mining is not anticipated in the Section 5 Corridor.

5.15.3.2 Shale and Gypsum

There are no known significant shale or gypsum deposits in the Section 5 Corridor.

5.15.3.3 Limestone

Limestone resources are known to underlie portions of the project corridor. Limestone is potentially marketable in the corridor in the area south of the southern terminus, north to Beanblossom Valley and with reduced potential from Wayport Road to Chambers Pike north of Bloomington in Monroe County. This is based on the quality of the limestone in the area, the shallow depth, and potential surface accessibility to the limestone resource. For this analysis, potential marketability does not take into consideration current market conditions or the current status of other proven marketable reserves. This potentially marketable limestone is from the Blue River Group and the Sanders Group. Presently, there is no active quarrying occurring within the Section 5 corridor. There several active limestone quarries, mills, and historic limestone landscape districts located near the Section 5 corridor:

- Two active quarries – B.G. Hoadley Quarries Inc. and Reed Quarries, Inc.;
- Three operating mills - B.G. Hoadley Quarries Inc., Hoosier Sawyer, and C & H Stone Company;
- Three Dimension Limestone Historic Landscapes (North Clear Creek, Hunter Valley, and Reed); and,
- Numerous abandoned/buried limestone quarries, equipment, buildings, rail beds, and large piles of limestone remnants.

Impacts to potentially marketable limestone resources in the alternatives range from 731 to 996 acres, but amount to only 129 to 301 acres, or just 18% to 30% of the available resources, when areas already developed are subtracted from the total potential area. Developed areas include existing residential, commercial, transportation and utility right-of-way, and managed lands.

Alternatives 4 and 5 have almost twice the impacts to the underlying available limestone resources as Alternatives 6, 7, 8, and Refined Preferred Alternative 8. Alternatives 4 and 5 have four times the impacts to an active limestone mill (C & H Stone; a former quarry) with 9 acres and office building impacts versus 2 acres and office building impacts for Alternatives 6, 8, and the Refined Preferred Alternative 8. Alternative 7 has the fewest impacts to the underlying available limestone resources and does not impact the active limestone mill. **Figure 5.15-2** shows the impacts to potentially marketable limestone resources.

An active limestone mill (C & H Stone; a former quarry) is located along Fullerton Pike and Rockport Road and adjacent to the Section 5 Corridor. Impacts to this facility are addressed as part of business displacements in **Section 5.2**, *Social Impacts*, and **Section 5.5**, *Economic Impacts*.

5.15.3.4 Gas, Oil, and Gas Storage Fields

Much of Southwest Indiana contains known petroleum reserves. Oil and gas drilling has occurred in scattered locations in Monroe and Morgan counties, including in the project corridor.

Presently, there are no active oil or gas production wells within the project corridor. The Hindustan Dome is currently used for natural gas storage and extends under the Section 5 corridor in the Morgan/Monroe county boundary area as shown on **Figure 5.15-2**.

While alternatives within Section 5 cross areas that may contain deposits of natural gas, construction of any of the alternatives should not impact the future extraction of these resources, due to improvements in technology and extraction processes. In addition, the gas storage wells associated with the Hindustan Dome natural gas storage system are located outside of the alternative right-of-ways.

5.15.3.5 Sand and Gravel

Sand and gravel resources are known in the Section 5 Corridor, but they have low potential for development. These areas exist in the Beanblossom Valley north of Bloomington and White River basin near Martinsville. One area of high potential is crossed near Legendary Hills south of Indian Creek within the Section 5 corridor, shown on **Figure 5.15-2**. All six alternatives have similar impacts for potential resource limitations as shown on **Table 5.15-1**.

5.15.4 Mitigation

No mitigation will be performed for impacts to known limestone deposits which are not commercially owned. Blasting specifications, found in INDOT's *Standard Specification Number 203.15* will be implemented during roadway construction to prevent damage to adjacent potentially marketable limestone resources. Limestone material removed from roadway cut sections will be incorporated into the roadway (e.g., used as fill, or crushed and used as roadway base).

If an abandoned or dry petroleum well is encountered during construction, proper closure methods shall be implemented through coordination with the Indiana Department of Natural Resources (IDNR) Division of Oil and Gas and the Indiana Department of Environmental Management (IDEM).

5.15.5 Summary

The major mineral resource within the Section 5 Corridor is limestone. Potentially marketable limestone in the corridor exists from the southern terminus north to Beanblossom Valley, with reduced potential from Wayport Road to Chambers Pike north of Bloomington in Monroe County. Alternative impacts to potentially accessible and marketable limestone resources range from 129 to 301 acres. While all of the proposed alternatives impact the mineral resources group to a similar degree, Alternatives 4 and 5 have almost twice the impacts to the potentially marketable available limestone resources as Alternatives 6, 7, 8, and Refined Preferred Alternative 8. In addition, Alternatives 4 and 5 have 9 acres and office building impacts to an active limestone facility (C & H Stone) versus 2 acres and an office building impact as part of Alternatives 6, 8, and Refined Preferred Alternative 8. There are no direct impacts to this facility from Alternative 7.

Section 5.15 Figure Index

(Figures follow this index.)

Figure 5.15-1: Abandoned Limestone Quarry

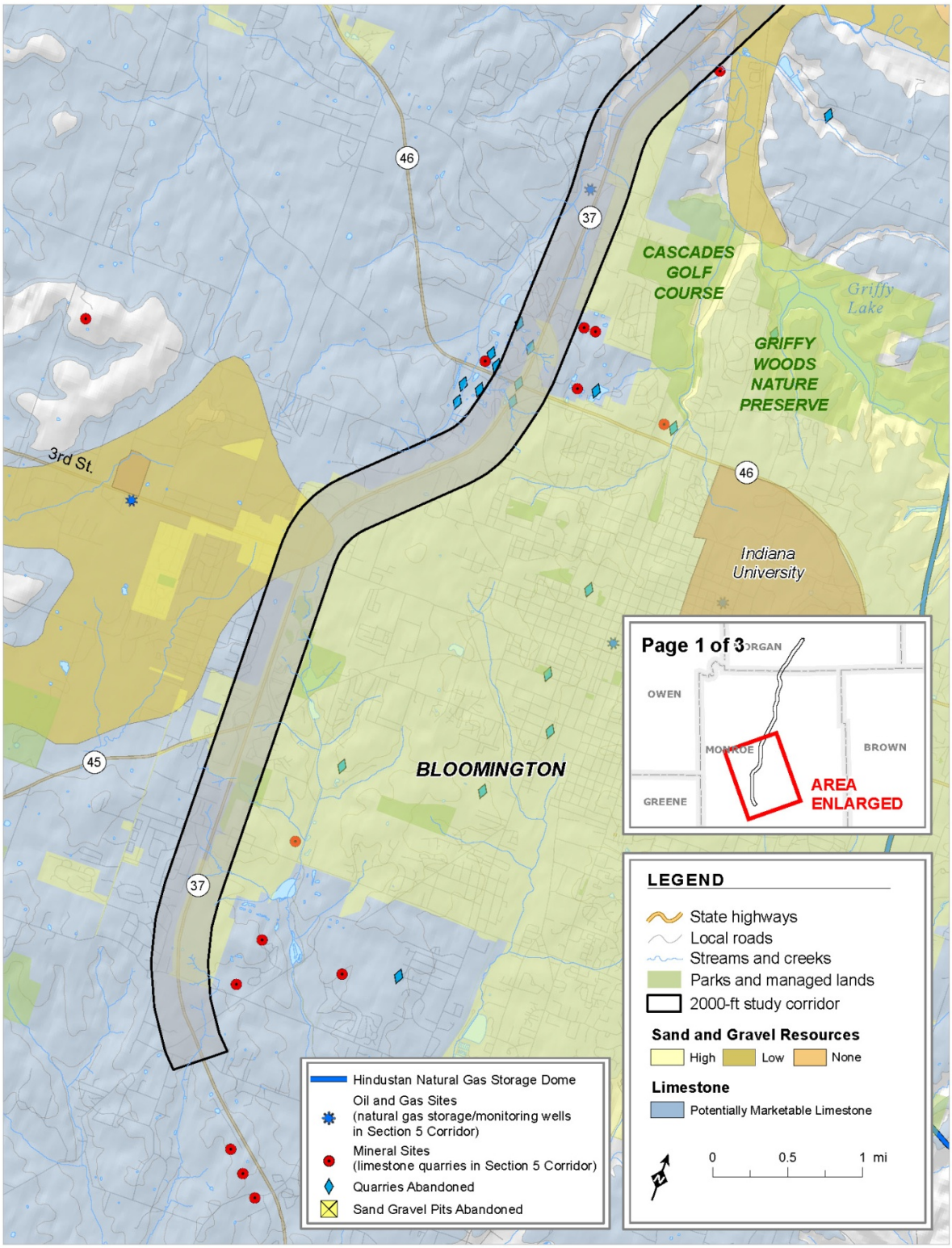

Figure 5.15-2: Section 5 Mineral Resources (Sheet 1 of 3)

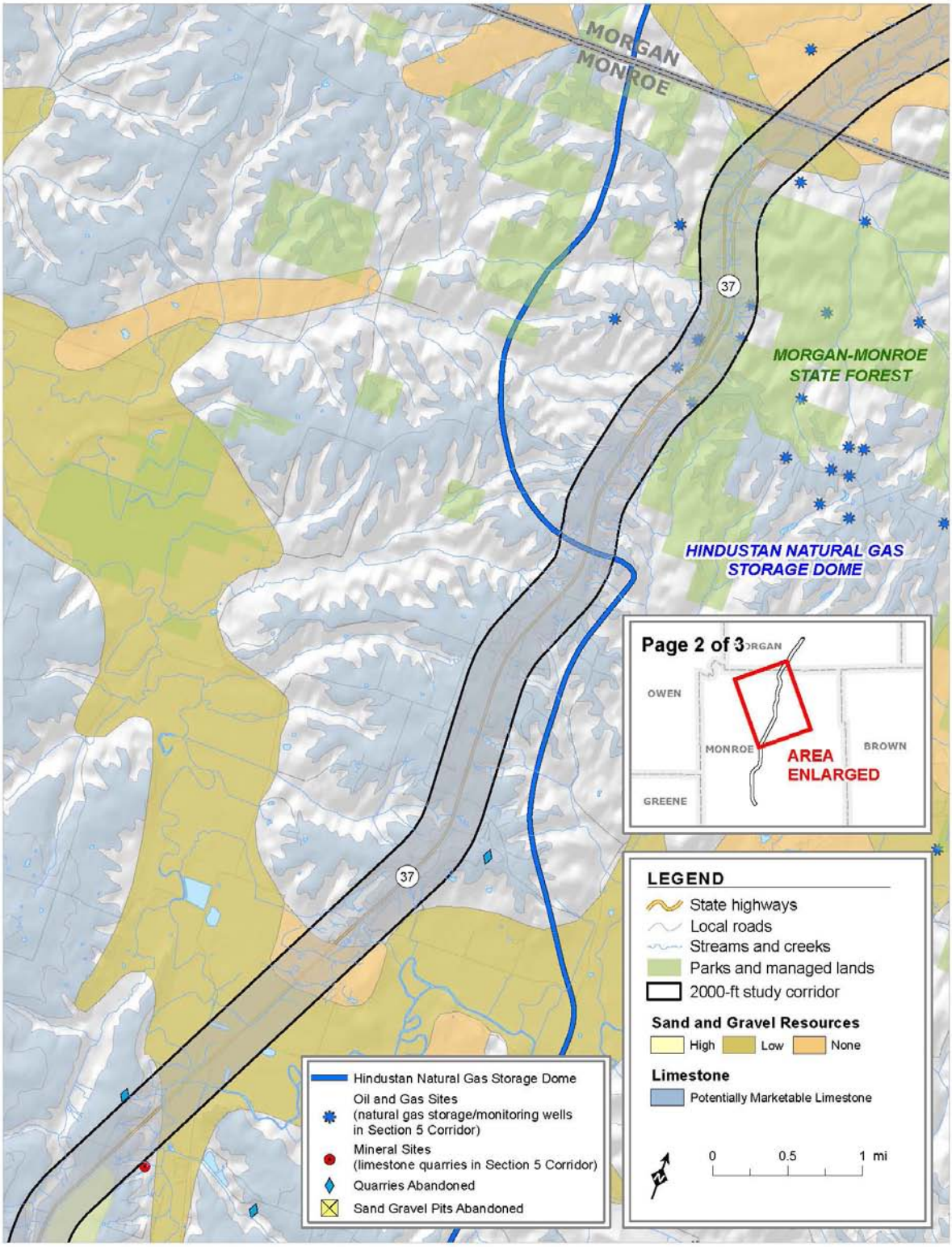

Figure 5.15-2: Section 5 Mineral Resources (Sheet 2 of 3)

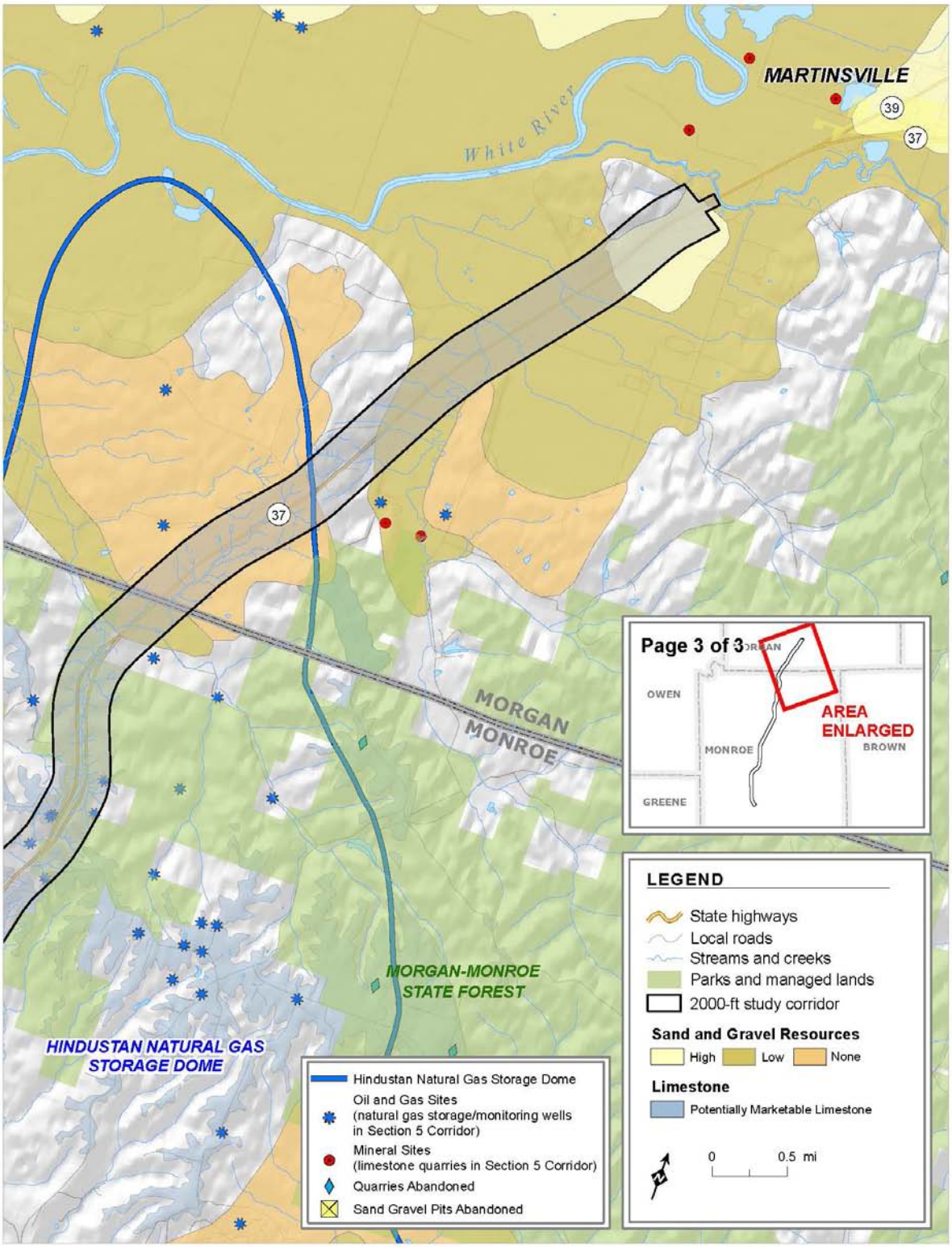

Figure 5.15-2: Section 5 Mineral Resources (Sheet 3 of 3)

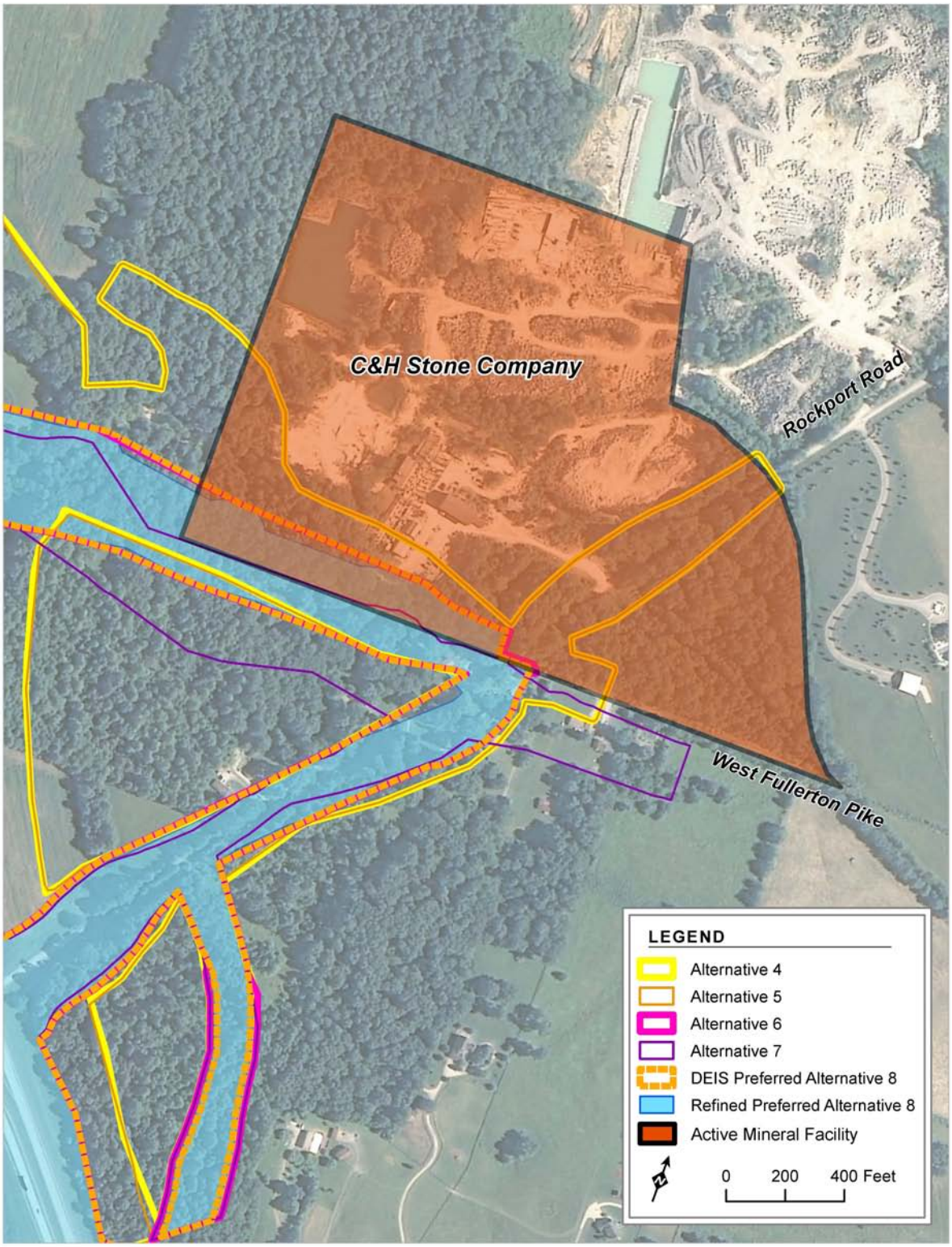

Figure 5.15-3: Section 5 – Active Mineral (Limestone) Facility – C & H Stone Company

5.16 Hazardous Waste Sites

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

Since the publishing of the DEIS, the following substantive changes have been made to this section:

- The Indiana Department of Environmental Management (IDEM) supplied a list of agency identified sites from March 2013. The sites in the vicinity of the 2,000-foot Section 5 corridor were reviewed and added into the previously gathered data sets.

- Descriptions of mitigation categories for sites identified for further evaluation have been added to **Section 5.16.2**, *Methodology*.

- The Hoosier Energy facility listed in **Table 4.5-1**: "Section 5 Potential Hazardous Waste Sites", was elevated to a "Site Reviewed for Additional Analysis" in **Section 5.16.3.1**, *UST and LUST Sites*.

- A former gas station (Former Amoco Unit # 10116) was added to **Table 4.5-1**: "Section 5 Potential Hazardous Waste Sites" and as a "Site Reviewed for Additional Analysis" in **Section 5.16.3.1**, *UST and LUST Sites*.

- Additional remediation action and protection outcome details and the post-DEIS released report from the United States Environmental Protection Agency (USEPA) entitled *USEPA Third Five-Year Review Report for the Bennett Stone Quarry* (USEPA, August, 2012) were incorporated into the Bennett's Dump description in **Section 5.16.3.2**, *Superfund Sites* narrative.

- Mitigation commitments to prevent drainage from increasing above the existing SR 37 levels for both the Bennett's Dump and Lemon Lane Landfill Superfund sites and blasting limitations have been added in **Section 5.16.4**, *Mitigation*.

5.16.1 Introduction

Hazardous waste sites are regulated by various laws including the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). During the Tier 2 process, the locations of permitted and non-regulated hazardous waste sites have been identified. The Indiana Department of Transportation (INDOT) Potential Hazardous Waste Site Assessment Form was used during the Tier 2 EIS process. Known or potential waste sites are identified and located on a map showing their relationship to the alternatives under consideration. If a known or potential hazardous waste site is impacted by an alternative, information about the site, the potential involvement, impacts, and

public health concerns of the affected alternative(s), and the proposed mitigation measures to eliminate or minimize impacts or public health concerns are discussed.

5.16.2 Methodology

The data used to identify the hazardous waste and Underground Storage Tank/Leaking Underground Storage Tank (UST/LUST) sites within the rights-of-way of the alternatives came from the Geographic Information System (GIS) layers and state and federal government databases. These databases are described in **Section 4.5.1**, *Introduction*.

In addition to these databases, information from the IDEM Virtual File Cabinet (VFC) (http://www.in.gov/idem/4101.htm) concerning UST/LUST, Superfund, brownfield, and voluntary remediation program sites was reviewed. IDEM supplied tables and map locations of identified sites from a March 2013 survey. The sites in the vicinity of the 2,000-foot Section 5 corridor were also reviewed and incorporated into the data set. Meetings with the USEPA and IDEM have been conducted to address specific sites of concern.

A windshield survey of the project corridor was conducted to verify the locations of listed sites and to augment the database listings with additional hazardous waste sites not included in the various databases. Locations were compared to aerial photographs of the corridor to determine which sites would likely be impacted by the proposed alternatives. Identified sites were then field inspected, and a Potential Hazardous Waste Site Assessment Form was completed for each location. Where possible, on-site inspections were conducted, which included photographs. **Figure 5.16-1** (figures are located at the end of the chapter) shows potential hazardous waste locations in the project corridor. **Figure 5.16-2** to **Figure 5.16-16** show the locations of potential hazardous waste sites relative to the alternatives, and **Figure 5.16-17** to **Figure 5.16-31** show reference site photographs. See **Appendix H**, *Hazardous Materials Report*, for more information on potential hazardous waste sites.

The 15 sites identified for further evaluation and discussed in the following **Section 5.16.3** *Analysis*, were categorized for mitigation based upon their potential to impact the build alternatives and the Refined Preferred Alternative 8. The mitigation categories include:

- **Final Design Confirmation** – This measure applies to sites where the final design contractor should confirm that the final design construction limits, right-of-way, and excavation depths avoid residual contamination and migration routes for the site, as was anticipated for the Refined Preferred Alternative 8 at the FEIS level of design. Confirmation will consist, at a minimum, of checking that the final design construction limits are within existing SR 37 right-of-way or at least within the Refined Preferred Alternative 8 construction limits, and that excavation depths are less than 10 feet below ground surface. In the event that avoidance of potential residual contamination or a migration route cannot be confirmed during final design, a Phase II Environmental Site Assessment (ESA) may be recommended.

- **Phase I ESA** – This measure applies to sites where the State would acquire a portion of the property as part of the Refined Preferred Alternative 8 right-of-way and additional

information beyond that evaluated as part of the Section 5 FEIS is recommended. A Phase I ESA provides INDOT with an understanding of the potential or existing hazardous materials/waste liabilities of a property prior to acquisition. A Phase I ESA consists of an updated agency database review, IDEM VFC review, interviews of site and adjacent property owners and applicable agencies, title/property ownership research, historic aerial photographs, topographic maps, city directories, and insurance maps, and a site reconnaissance prior to acquisition of the property. The Phase I ESA may include a recommendation for a subsequent Phase II ESA; however, based upon available information, a Phase I may not be necessary for recommendation of a Phase II.

- **Phase II ESA** – This measure applies to sites either following Phase I ESA recommendation or that are already recognized as having potential residual contamination and/or migration routes as part of the Refined Preferred Alternative 8 FEIS evaluations. These may be due to potential for contamination in planned property acquisition areas or properties adjacent to the Refined Preferred Alternative 8. A Phase II ESA consists of soil and/or groundwater sample collection for confirmation or investigation of potentially contaminated materials within the Section 5 Project from an off-site source prior to construction activities at a given location. The Phase II recommendations were based upon Section 5 FEIS agency records, interviews, and site observations for the Refined Preferred Alternative 8. While a Phase I ESA is not necessarily a requirement for conducting a Phase II ESA, a Phase I ESA may include a recommendation for a Phase II ESA.

- **Mitigation Commitment –** Such measures apply to sites not directly impacted but where mitigation commitments have been made in response to a regulatory agency request to address potential indirect impacts from the Refined Preferred Alternative 8.

- **Caution** – Locations where non-site specific potential hazardous materials could be encountered as part of the Refined Preferred Alternative 8 such as:

    - If undocumented USTs are encountered, they will be removed in accordance with applicable state and federal laws and regulations. As part of the removal of the USTs, an impact assessment consisting of soil and/or groundwater testing will be performed.
    - Coordination will occur with the utility and private owners of electrical transformers before and during construction for proper handling and removal of any transformers or pipes affected by Refined Preferred Alternative 8.

5.16.3 Analysis

Potential impacts upon hazardous waste sites (sites with recognized environmental conditions) were determined per the right-of-way and development of Alternatives 4, 5, 6, 7, and 8 based upon conceptual design criteria. The Refined Preferred Alternative 8 is a combination of the desirable elements within Alternatives 4, 5, 6, 7, and 8, and based upon resource impacts, integration with existing infrastructure, and cost.

5.16.3.1 UST and LUST Sites

Eight UST and/or LUST sites were identified in the Section 5 corridor and are described as follows:

- **Sam's Club** #6437 (Site HM-2), located at 3205 West SR 45 in Bloomington, is located adjacent to existing SR 37 right-of-way at the southwest quadrant of the existing SR 37 and SR 45/2nd Street interchange (**Figure 5.16-3**). According to IDEM records, a 2003 UST notification listed a minor spill (5 gallons) of motor oil and water that affected sanitary sewer water in 1997, the installation of three 20,000 gallon gasoline tanks, and operations were noted in 2004. The USTs are located at the northeast portion of the property, just west/adjacent to a canopy-covered fueling center. An automotive maintenance bay was observed on the north side of the retail building. The relatively recent UST installation and lack of reported releases are positive factors; however, due to the close proximity of the active USTs to the Section 5 corridor, the Sam's Club facility is being included for further assessment. Alternative 4 and 5 would impact the north and eastern portions of the site and adjoin the USTs and fuel islands. This facility will be impacted on the eastern edge of the property along existing SR 37 by Alternative 7, Alternative 8, and Refined Preferred Alternative 8. The facility will also be impacted along the northern property by a local service road included in the Refined Preferred Alternative 8.

  Based on the proximity of the Refined Preferred Alternative 8, local access road construction limits, and right-of-way acquisition to the fuel dispensing and UST locations, a Phase II ESA consisting of soil and groundwater sampling is recommended. The Phase II will be limited to proposed property acquisition area along the UST locations. **Figure 5.16-18** shows the current UST and fuel island area.

- The **Coca Cola** bottling facility (Site HM-3), at 1701 Liberty Drive, is located northwest of the SR 37 and SR 45/2nd Street interchange (**Figure 5.16-4**). According to available IDEM records, three USTs were installed at the facility in 1987; the owner reported UST removals in 2003, which were confirmed with a 2006 No Further Action (NFA) letter from IDEM. The reported UST locations and low levels of petroleum in soil samples indicated a low potential for encountering contamination. While groundwater was not encountered during the investigation, the former USTs reported location is within the estimated drainage area of a two-acre sinkhole that extends under site parking lots. The site is located at a higher elevation than the SR 37/I-69 and SR 45/2nd Street interchange. Based upon the underlying karst conduits (sinkhole and adjacent buried sinks), there remains a potential for impacted groundwater to have migrated into the SR 45/2nd Street interchange right-of-way or construction area. This facility will be impacted on the eastern edge of the property along existing SR 37 by Alternatives 4 and 5. Alternatives 6, 7, 8, and the Refined Preferred Alternative 8 do not directly impact the site. The Refined Preferred Alternative 8 includes additional travel lanes to the existing SR 37 median and relocates the existing SR 45 and SR 37 interchange exit ramp in the northwest quadrant further to the east and away from a buried sink and the Coca Cola site. This eastern shift

would reduce the potential for encountering contaminated groundwater that may have followed surface drainage or karst conduits into the project area.

While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes, during final design it should be confirmed that this is still the case for final construction limits, right-of-way, and excavation (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface). **Figure 5.16-19** shows the current facility.

- The **Kmart #7402 parking lot** (Site HM-4), at 3175 West 3rd Street, is located southwest of the SR 37 and SR 48/3rd Street interchange (**Figure 5.16-5**). According to IDEM records, one UST located on the east side of the property was listed as "Permanently out of Service". While the UST was removed and received a NFA from IDEM, due to the limited samples collected and close proximity to the proposed alternatives, further evaluation is warranted. This facility will be impacted on the eastern edge of the property along existing SR 37 by Alternatives 4 and 5. Alternatives 6, 7, 8 and the Refined Preferred Alternative 8 retain the use of the existing SR 48 and SR 37 bridge structure and interchange entrance ramp in the southwest quadrant, and includes additional travel lanes to the existing SR 37 median. These are expected to have minimal excavation in the area adjacent to the former UST location.

  While the Refined Preferred Alternative 8 right-of-way avoids impacts from residual contamination and migration routes for the site, during final design it should be confirmed that this is still the case for final construction limits, right-of-way, and excavation depth (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface). **Figure 5.16-20** shows the current parking area.

- The **former Amoco Unit #10116** (Site HM-5), which is currently a restaurant (White Castle) at 3100 West 3rd Street, was located northwest of the SR 37 and SR 48/3rd Street interchange (**Figure 5.16-6**). Five USTs were reported closed in 1989 at the former gas station (one 10,000 gallon and two 8,000 gallon with gasoline, one 6,000 gallon diesel, and one 550 gallon waste oil). Contaminated soils were removed and groundwater contaminant levels were decreasing prior to the IDEM agreement for NFA in 1997. Based upon IDEM VFC maps and IDEM LUST personnel, it appears the existing SR 37 right-of-way and drainage system in the northwest quadrant of the SR 37 and SR 48/3rd Street interchange may include a portion of the former USTs and elevated groundwater.

  This facility will not be directly impacted by any of the six alternatives. While the Refined Preferred Alternative 8 right-of-way avoids impacts from residual contamination and migration routes for the site, during final design it should be confirmed that this is still the case for final construction limits, right-of-way, and excavation depth (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface). **Figure 5.16-21** shows the current White Castle fast food restaurant at this location from the SR 37 right-of-way.

- The **former Marathon Unit #2572** (Site HM-6), which is currently a restaurant at 2850 West 3rd Street (China House), was located northeast of the SR 37 and SR 48/3rd Street interchange (**Figure 5.16-7**). Four USTs were reported "Permanently out of Service" at the former gas station (three 8,000 gallon gasoline tanks and one 500 gallon used oil tank). No sampling or assessment was reported. This facility will not be directly impacted by any of the six alternatives. The Refined Preferred Alternative 8 retains the use of the existing SR 48 and SR 37 interchange entrance ramp in the northeast quadrant, and adds bicycle pedestrian and roadway upgrades along existing SR 48/3rd Street. These are expected to have minimal excavation in the area adjacent to the former UST location.

  While Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for the site, during final design it should be confirmed that this is still the case for final construction limits, right-of-way, and excavation depth (no excavation outside of proposed Refined Preferred Alternative 8 construction limits and less than 10 feet below ground surface). **Figure 5.16-22** shows the current China House restaurant at this location from the SR 37 right-of-way.

- The former **Hanna Trucking** facility (Site HM-8), also known as United Rentals, is currently owned by Dave O'Mara Contractor, Inc. The facility is at 2520 Industrial Drive, and is located adjacent to the western existing SR 37 right-of-way, just southwest of the SR 37/Vernal Pike intersection (**Figure 5.16-9**). According to available IDEM records, a 1,000 gallon used oil UST was removed in 1999 ("Permanently out of Service") and one 10,000 gallon diesel tank and one 2,000 gallon gasoline tank were removed in 2006. A NFA letter was issued in 2010 following site remediation and removal of approximately 800 tons of contaminated material. A spill report, oil drums, and oil water separator were also reported during a 2006 Section 5 field visit and document review. Due to the amount of removed material and the potential for contamination to migrate beyond the investigation area in a karst area, there is a potential for encountering contaminated materials associated with this site. This facility will be impacted on the southern edge of the property along existing Industrial Park Road by Alternatives 6, 7, 8, and Refined Preferred Alternative 8. The Refined Preferred Alternative 8 upgrades the existing Industrial Park Road along the southeast edge of the site and is expected to have minimal excavation in the area adjacent to the former UST location.

  While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for the site, during final design it should be confirmed that this still the case for final construction limits, right-of-way, and excavation depth (no excavation outside of proposed Refined Preferred Alternative 8 construction limits and less than 10 feet below ground surface). **Figure 5.16-24** shows the yard and maintenance buildings.

- The **Hoosier Energy** facility (Site HM-13) includes the utility headquarters, electrical distribution center, and transformer service and maintenance facility located adjacent to the east side of existing SR 37 right-of-way between Walnut Street and Sample Road (**Figure 5.16-14**). During closure of 5 USTs in 1993, low levels of soil contamination were reported. The facility is located at 7398 North SR 37, and adjacent to the existing SR 37 right-of-way. The site was considered discontinued/low priority by IDEM in May

1995, based upon low residual but inaccessible soil contamination. These USTs were replaced with four USTs currently in operation that include a 10,000 gallon gasoline tank; a 4,000 gallon diesel tank, a 550 gallon waste oil tank at the maintenance garage, and a 550 gallon diesel UST for an emergency backup generator at the electrical distribution center. No comments were noted in the February 2013 IDEM UST inspection. Two 2,500 gallon above ground tanks, 55 gallon drums, and over 100 transformers containing transformer oil (on secondary containment) are also located at the transformer service and maintenance facility. The transformer/maintenance facility will be impacted by Alternatives 4 and 5. The utility headquarters/electrical distribution center will be impacted along the eastern edge of the property along existing SR 37 by all six of the alternatives. The Refined Preferred Alternative 8 encroaches into the western edge of the upgrades with the addition of a local access road, cul-de-sac, traffic barriers, and retaining walls. While these will include excavation, except for the downgradient 550 gallon backup generator UST, all of the remaining contaminate sources are separated from the project area by a valley containing a small stream.

Due to the site's regulatory listing and overlap with Refined Preferred Alternative 8 right-of-way, a limited Phase II ESA for the proposed retaining wall or replacement of existing SR 37 drainage along western edge of the property is recommended prior to property acquisition by INDOT. **Figure 5.16-29** shows the training building, cell tower, and transformer service/maintenance facility in the distance.

- The **Johnson Oil Bigfoot #071** service station (Site HM-14) is currently operated by and also known as BP Circle K. The site at 7340 North Wayport Road is located southeast of the intersection of SR 37 and Sample Road (**Figure 5.16-15**). Five USTs are currently in operation. A Phase II site investigation indicated low levels of soil contamination when the three petroleum USTs were closed in 1989. These USTs were replaced with five USTs currently in operation and include: two 8,000 gallon tanks containing gasoline; one 12,000 gallon tank containing gasoline; one 8,000 gallon tank containing diesel fuel; and one 4,000 gallon tank containing kerosene. Due to the close proximity of the former and active USTs to the Section 5 Corridor, further review is recommended. This facility will be impacted on the western edge of the property along existing SR 37 by all six of the alternatives and through the parcel by Alternatives 4 and 5. The facility is upgradient of the local service road and exit ramps in the southeast quadrant of the proposed I-69 and Sample Road interchange included in the Refined Preferred Alternative 8.

  Based the proximity of the Refined Preferred Alternative 8 local access road and exit ramp construction limits and right-of-way acquisition to the fuel dispensing and UST locations, a Phase II ESA consisting of soil and groundwater sampling is recommended. The Phase II will be limited to the proposed property acquisition area along the UST locations along the western edge of the property and downgradient of the site to the south. **Figure 5.16-30** from the SR 37 right-of-way shows the active gas station and service pumps.

5.16.3.2 Superfund Sites

There are two Superfund sites located in the vicinity of the 2,000-foot Section 5 corridor: Lemon Lane Landfill (located east of the intersection of SR 37 and Vernal Pike) and Bennett Stone Quarry (located northwest of the SR 37/SR 46 interchange). The two sites were found to have released polychlorinated biphenyl (PCB) contamination into local soil, karst/bedrock, groundwater, and streams, which are currently undergoing remediation (source control, hydraulic control, and groundwater treatment). The sites are considered "Areas of Special Concern" to the Section 5 Study Area based on the possibility that water drainage from an improved roadway could interfere with current or future remediation activities administered by USEPA and IDEM. Coordination with USEPA and IDEM has occurred throughout the Section 5 study and will continue through the design phase.

- The **Lemon Lane Landfill** site (Site HM-7) is located southeast of the intersection of SR 37 and Vernal Pike (**Figure 5.16-8**). The Lemon Lane site is a former 10-acre municipal landfill that accepted both municipal and industrial waste material. The site is located adjacent to the Section 5 Corridor, approximately 1,000 feet from existing SR 37 pavement. The Lemon Lane Landfill was operated as a sanitary landfill from the late 1930s to 1964 and included PCB contaminated capacitors, materials, and other industrial wastes. According to USEPA documents, from about 1958 until 1964, a large number of electrical capacitors containing PCBs were dumped at the site. From 1958 until 1964, PCBs were released from many of the electrical capacitors when metal scavengers broke open the capacitors to reclaim internal metal capacitor parts. Labels found on the capacitors linked the PCB contamination to the Westinghouse Electric Corporation (later Viacom and now doing business as CBS).

  Source removal and encapsulation remedial measures have been completed at the former landfill site and included: Phase II Assessments and delineation; excavation and offsite landfill disposal of 80,087 tons of PCB contaminated material; offsite incineration and disposal of 4,402 capacitors; consolidation of 40,000 cubic yards of landfill material to an approximately 9-acre area; isolation of this landfill material via installation of a landfill cap, perimeter drainage, and security fencing; and a stormwater retention pond. The cleanup of areas outside the landfill boundary was to a high occupancy/residential standard of two ppm PCBs (on average) to the north (toward Vernal Pike), east, and west (toward SR 37) sides of the site. The cleanup along the southern side toward the CSX railroad was to 20 ppm to meet construction workers standards. Potential exposure to landfill related soil contamination (in excess of industrial land use standards of 10 ppm PCBs) is minimal based upon the upgradient, higher elevation, 1,000-foot separation from existing SR 37 and all of the alternatives, and the completion of on-site soil remedial actions to residential, industrial, and construction worker standards.

  Additional remedial actions address surface water and groundwater from the Superfund site that drain to the Illinois Central Spring (ILCS) via conduits developed in the karst. Due to elevated PCB concentrations, water discharging from ILCS is captured and treated prior to release to surface water. While attempts were made to treat all of the water discharged from the ILCS, the treatment plant's treatment rate (1,000 gpm via

carbon adsorption) and storage capacities have been exceeded during historic peak flows. The highest PCB results were associated with these peak flows and threatened sediment and water quality in the receiving stream. Recent additions at the plant have added an additional 5,000 gpm treatment capacity. The combined treatment systems are expected to treat nearly 100% of the ILCS spring water and to prevent 99.9% of the PCB mass from entering the receiving stream. A discussion of groundwater flow is provided in the Karst report (see **Appendix Y**, *Final Karst Report (Redacted)*).

The current alignment of SR 37 is along the northwestern edge of the previously reported ILCS recharge area, from the CSX railroad north to between Vernal Pike and West 17th Street. Subsequent karst investigations for the Section 5 corridor have revised the recharge area and show that a smaller portion of existing SR 37 is within the ILCS recharge area; extending approximately from 1,200 feet south to 1,200 feet north of the existing Vernal Pike intersection (see **Section 5.21**, *Karst Impacts*). Changes in land use could increase the volume or frequency of the excess flows and have an adverse impact on the effectiveness of the ILCS discharge treatment. IDEM and facility operators have requested that the I-69 project not increase the volume of runoff water entering the ILCS recharge area.

Alternatives 4 and 5 widen to the west and away from the Site HM-7 Lemon Lane Landfill/ILCS recharge area, and Alternatives 6, 7, 8, and Refined Preferred Alternative 8 maintain use of the existing SR 37 right-of-way and adds additional lanes within the existing SR 37 median. INDOT has made a mitigation commitment for blasting restrictions and to prevent drainage from increasing above the existing SR 37 levels. This commitment extends for the area along the eastern side of SR 37 that is within the Site HM-7 Lemon Lane Landfill/ILCS recharge area. It addresses USEPA and IDEM concerns regarding changes in existing groundwater flow (see **Figure 5.16-8**). While none of the six alternatives will directly impact the landfill, the current alignment of SR 37 and all of the six alignments are along the northwestern portion of the ILCS recharge area. **Figure 5.16-23** shows the fenced containment cap.

- **Bennett Stone Quarry** (aka Bennett's Dump, Site HM-11), consists of a parcel owned by Ledge Wall Quarry LLC (formerly Star Quarry Inc.) and covers about four acres of the parcel. It is located northwest of the current SR 37/SR 46 interchange and west of the Section 5 corridor (approximately 1,000 feet from the existing SR 37 pavement) and is shown in **Figure 5.16-12**. While existing SR 46 and SR 37 are upgradient of the Bennett's Dump site, the Section 5 alternatives are over 1,400 feet to the east of the site boundary. Meetings with USEPA and IDEM have been conducted and continue for specific sites of concern.

  According to USEPA documents, the site was formerly a limestone quarry pit that had been filled with various waste materials including demolition debris, household wastes, and electrical parts. A large number of electrical capacitors containing PCBs were dumped at the site during the 1960s and 1970s. Labels found on the capacitors linked the PCB contamination to the Westinghouse Electric Corporation (now doing business as CBS), which manufactured capacitors in Bloomington from about 1958 until the mid-

1970s. In early 1984, Bennett's Stone Quarry was added to a list of sites to be included in the Consent Decree negotiations with CBS and USEPA, the City of Bloomington, Indiana State Board of Health, and Monroe County. The 1998 USEPA Record of Decision (ROD) Amendment selected a cleanup remedy that included excavation and incineration of PCB contaminated material, sediment removal from Stout Creek, and long-term groundwater monitoring. Low levels of PCB contamination were identified in five springs (Mound Spring, Middle Spring, Mid-North Spring, North Spring, and Rusty Spring) that discharge to the adjoining Stout Creek. CBS conducted Phase II Assessments and investigations for groundwater, hydrogeology and karst geology at the site. The SR 46 extension was constructed south of the site in 2000. During construction, a group of former quarries were filled and portions of the Stout Creek drainage system were altered. The site has exhibited elevated groundwater levels since construction of SR 46.

Remedial actions have included the excavation and off-site treatment/disposal of 37,913 tons of PCB contaminated soils and materials, installation of a passive drain system in 2010 to allow upgradient abandoned quarry pits and waste stone areas to drain directly to Stout Creek, thereby bypassing residual contaminates at the dump site, and limited sediment removal and bank stabilization along Stout Creek. The remedy for the source control area has been implemented with confirmation sampling showing residual PCBs in soils below the site cleanup level of 25 ppm. Potential exposure to landfill related soil contamination (in excess of construction worker standards) is minimal based upon the upgradient, higher elevation, and 1,000-foot separation from existing SR 37 and all of the alternatives, and the completion of on-site soil remedial actions to site cleanup standards.

The remedy for groundwater has not been completely implemented, since low levels of PCBs continue to be detected at onsite springs. Recent data by USEPA indicated that the PCB mass discharging into Stout Creek is being reduced by over 80% with the installation of the passive quarry drain. While the passive quarry drain has been constructed and is functioning well, PCBs continue to be released from on-site springs to Stout Creek, and further investigation by CBS into capturing and treating these releases is ongoing. The installation of a collection trench, on-site water treatment plant, and appropriate institutional controls are also under consideration as part of the completion of the groundwater remedy. A remedial option has not yet been chosen.

While none of the build alternatives will impact the dump directly, the current alignment of SR 37 and all of the six proposed alignments are upgradient of Bennett's Dump at the SR 37/SR 46 interchange. **Figure 5.16-27** shows monitoring wells in the impacted soil area. Alternatives 4 and 5 widen to the outside of existing SR 37 lanes while Alternatives 6, 7, 8, and Refined Preferred Alternative 8 maintain use of the existing SR 37 right-of-way and add additional lanes within the existing SR 37 median. INDOT has made a mitigation commitment for blasting restrictions and to prevent drainage from increasing above the existing SR 37 levels extending along the northwest quadrant of the SR 37/SR 46 interchange area to address USEPA and IDEM concerns regarding changes in existing drainage at the Site HM-11 - Bennett's Dump area (see **Figure 5.16-11**).

5.16.3.3 Active/Abandoned Landfill Sites

No additional active or abandoned landfill sites were identified in or near the proposed alternatives.

5.16.3.4 Other Hazardous Waste Sites

There are five locations that lie within the Section 5 corridor that represent a potential environmental concern. The INDOT Subdistrict (located northeast of the SR 37/SR 46 interchange), was found to be of environmental concern based on data from the USEPA Resource Conservation and Recovery Information System (RCRIS) database. Sturgis Auto Salvage (located southwest of the intersection of SR 37 and Vernal Pike); Bloomington Auto Parts (located northeast of the intersection of SR 37 and Sample Road); Dotlich Crane Service (located northeast of the intersection of SR 37 and Vernal Pike); and, C & H Stone Company (located east of SR 37 in northwest intersection of Fullerton Pike and Rockport Road), were determined to be of potential environmental concern through windshield surveys and interviews.

- The **INDOT Subdistrict** (Site HM-12), at 2965 North Prow Road, is located adjacent to the east side of the existing SR 37 right-of-way, just north of the Arlington Road overpass (**Figure 5.16-13**). The INDOT Subdistrict site is listed as a conditionally exempt small quantity generator of hazardous waste. A 500-gallon used oil tank and several 55-gallon drums of oil and hydraulic fluid use were observed. The facility currently operates as a roadway maintenance facility with salt vehicle parking, and repair, storage, and maintenance buildings. While historic petroleum storage quantities have been minor, due to the close proximity of the facility to the Section 5 Corridor, further review is recommended. This facility will not be directly impacted by any of the six alternatives. Refined Preferred Alternative 8 retains the use of the existing SR 37 and includes additional travel lanes to the existing SR 37 median. These improvements are expected to have minimal excavation in the area adjacent to the site.

  While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for the site, during final design it should be confirmed that this still the case for final construction limits, right-of-way, and excavation depth condition (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface). **Figure 5.16-28** shows the vehicle parking as well as storage and maintenance buildings within SR 37 right-of-way.

In addition to the sites listed on state and federal environmental databases, four additional potential hazardous waste sites warranting detailed study were determined through windshield surveys and interviews: Sturgis Auto Salvage, Dotlich Crane Service, Bloomington Auto Parts, and C & H Stone Company.

- **Sturgis Auto Salvage** lot (Site HM-9), at 2810 West Hensonburg Road, is located approximately 200 feet west of the existing SR 37 right-of-way, just north of the existing SR 37/Vernal Pike intersection (**Figure 5.16-10**). Observed at the site were automobile salvage operations, used oil tank drums, and an adjoining former auto service/painting

facility, which may be of concern for paint and other chemicals. Given the long history of petroleum storage and salvage operations and the close proximity of the facility to the Section 5 corridor, further review is recommended. This facility will be impacted with relocation of Industrial Park Road on the eastern portion of the property by Alternatives 6, 7, 8, and Refined Preferred Alternative 8, and through the center of the parcels by Alternatives 4 and 5. The Refined Preferred Alternative 8 relocates the existing Industrial Park Road through the site.

Due to the type of operations, field observations at the site, and the overlap with Refined Preferred Alternative 8 right-of-way, a Phase II ESA consisting of soil and groundwater testing is recommended. **Figure 5.16-25** shows the vehicle parking as well as storage and maintenance buildings.

- The **Dotlich Crane Service** (Site HM-10) property stores and maintains crane equipment and is located northwest of the intersection of Crescent Road and West 17th Street and northeast of the intersection of SR 37 and Vernal Pike (**Figure 5.16-11**). Cranes and other related equipment are parked in a gravel lot at the facility. One 550 gallon above-ground storage tank (AST) containing diesel fuel and no secondary containment was observed at the facility.

  Due to the type of operations, field observations at the site, and the overlap with the Refined Preferred Alternative 8 right-of-way, a Phase I ESA is recommended prior to property acquisition by INDOT. The Phase I ESA may include a recommendation for a subsequent Phase II ESA. **Figure 5.16-26** shows the crane parking and repair yard.

- **Bloomington Auto Parts** (Site HM-15), at 7650 North SR 37, is located adjacent to the east side of existing SR 37 right-of-way, north of Sample Road (**Figure 5.16-16**). The site includes significant and widespread salvage operations and automotive storage, and 55 gallon drums containing motor oil were observed during the field inspection. An IDEM inspection report noted that several truck-loads of contaminated soil were removed in 2004 and that the facility has been under enforcement action as a result of compliance violations noted during inspection of the facility in 2004. Past violations included open dumping of waste tires, oil from stored engines, refrigerants, soil contamination, storm water plans and monitoring..

  While this facility will not be directly impacted by any of the six alternatives, based upon the close proximity of potential contaminate sources to the Refined Preferred Alternative 8 construction limits, observed operations, and reported violations at the site, a limited Phase II ESA along existing SR 37 right-of-way consisting of soil and groundwater testing is recommended. **Figure 5.16-31** shows salvaged vehicles and the buildings immediately adjacent to the existing SR 37 right-of-way.

- **C&H Stone Company** (Site HM-1), at 4000 South Rockport Road, is located approximately 500 feet east of existing SR 37 right-of-way along Fullerton Road and northwest of the intersection of Fullerton Pike and Rockport Road (**Figure 5.16-2**). The site has been in operation since 1927 and reportedly included a blacksmith forge, boilers,

coal piles, steam powered cranes, locomotives, limestone quarrying and milling, truck and railroad shipping, various fuel tanks, lubricants, heavy equipment staging, operations, and maintenance, bulk material storage, settling ponds and water withdrawal points. The site is still an active limestone mill and former quarry with numerous buildings, cranes, heavy equipment, sawing pits, related equipment, former railroad spurs, and various gravel lots. Several 55 gallon drums of hydraulic fluid, as well as 300 and 500 gallon gasoline and diesel ASTs were noted at the facility. This site is carried forward due to the long history of operations and the close proximity to the Section 5 Corridor. This facility will be impacted on the southern boundary along West Fullerton Pike by Alternatives 4, 5, 6, 8, and Refined Preferred Alternative 8.

Due to the type of operations, field observations at the site, and the overlap with the Refined Preferred Alternative 8 right-of-way, a Phase I ESA is recommended prior to property acquisition by INDOT. The Phase I ESA may include a recommendation for a subsequent Phase II ESA. **Figure 5.16-17** shows the Fullerton Pike entrance to the milling area.

Numerous rural residences and farms were identified within the Section 5 corridor that may have the potential for ASTs and USTs to be present. These tanks are typically used for heating, on-site storage of chemicals associated with pesticides and herbicides, and fuel for equipment. No specific sites were identified.

During the field inspection, utility-owned pole-mounted, slab-mounted, and sub-station electrical transformers were observed along public rights-of-way. While visible indicators of oil leakage were not specifically noted, due to the number, variety of age/condition, and placement of these transformers, all six alternatives (including Refined Preferred Alternative 8) may impact some of these transformers. Transformers are part of standard utility provision and would be addressed in coordination with utility companies and private property owners following INDOT utility relocation coordination and property acquisition protocols.

5.16.4 Mitigation

Phase I ESAs are recommended for two HM sites due to the Refined Preferred Alternative 8 anticipated right-of-way property acquisitions and additional information beyond that evaluated as part of the Section 5 FEIS is recommended. While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for six HM sites, during final design it would be confirmed that this is still the case for final construction limits, right-of-way, and excavation depth (no excavation outside of existing SR 37 right-of-way or Refined Preferred Alternative 8 construction limits and less than 10 feet below ground surface). A Phase II ESA consisting of soil and/or groundwater testing would be conducted for five properties located within Refined Preferred Alternative 8 that were LUST or UST sites). The Phase I and II ESAs will be performed prior to or as part of the right-of-way acquisition process.

While no USTs were reported within the Refined Preferred Alternative 8, in the event that an unknown UST is encountered, it will be removed in accordance with 329 IAC 9, which includes an assessment of soil and groundwater. The mitigation measures listed below (from south to

north) have been developed for the potential hazardous waste sites impacted by one or more of the six Section 5 alternatives:

- **Final Design Confirmation** – While the Refined Preferred Alternative 8 right-of-way avoids residual contamination and migration routes for six HM sites, during final design it would be confirmed that this is still the case for final construction limits, right-of-way, and excavation depths at these six sites, which include: Site HM-3 - Coca Cola Bottling, Site HM-4 - Kmart Parking Lot, HM-5 Former Amoco Unit 10116, Site HM-6 Former Marathon Unit 2572, Site HM-8 - Hanna Trucking, and Site HM-12 - INDOT Subdistrict. Confirmation will consist, at a minimum, of checking that the final design construction limits are either within existing SR 37 right-of-way and/or the Refined Preferred Alternative construction limits, and that excavation depths are less than 10 feet below ground surface. In the event that avoidance of potential residual contamination or a migration route cannot be confirmed during final design, a Phase II ESA may be recommended.

- **Phase I ESA** – Prior to property acquisition by INDOT, a Phase I ESA is recommended for sites where a portion of an HM site is part of the Refined Preferred Alternative 8 right-of-way and additional information beyond that evaluated as part of the Section 5 FEIS is recommended. These include two HM sites: Site HM-1 - C&H Stone Company and Site HM-10 - Dotlich Crane Service. The Phase I ESA may include a recommendation for a subsequent Phase II ESA.

- **Phase II ESA** – Based upon the potential to encounter residual soil and/or groundwater contamination, Phase II ESAs are recommended at five HM sites as part of the Refined Preferred Alternative 8: HM-2 – Sam's Club (limited Phase II ESA), Site HM-9 - Sturgis Auto Salvage, Site HM-13 - Hoosier Energy (limited Phase II ESA), Site HM-14 - Johnson Oil Bigfoot (aka Circle K/BP; limited Phase II ESA), and Site HM-15 - Bloomington Auto Parts (limited Phase II ESA) and will consist of soil and/or groundwater testing. The Phase II ESAs will determine if the properties located within Refined Preferred Alternative 8 right-of-way limits, or adjacent sites with an elevated potential for contamination entering the right-of-way, have been impacted. The Phase II ESAs will be performed prior to, or as part of, right-of-way acquisition.

- **Mitigation Commitment** – Alternatives 4 and 5 widen away from Site HM-7 Lemon Lane Landfill/ILCS recharge area, and Alternatives 6, 7, 8, and Refined Preferred Alternative 8 maintain use of the existing SR 37 right-of-way and add additional lanes within the existing SR 37 median area. INDOT has made a mitigation commitment to prevent I-69 drainage from increasing above the existing SR 37 levels extending along the eastern side of SR 37 that is within the Lemon Lane Landfill/ILCS recharge area to address USEPA and IDEM concerns regarding changes in existing groundwater flow. Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system (see **Figure 5.16-8**). Coordination with USEPA and IDEM has occurred throughout the Section 5 study and will continue through the design phase. Design plans for construction in this area will be provided to USEPA and IDEM for review with a requested two-week turnaround time for comments.

- **Mitigation Commitment** – Alternatives 4 and 5 widen to the outside of existing SR 37 lanes while Alternatives 6, 7, 8, and Refined Preferred Alternative 8 maintain use of the existing SR 37 right-of-way and add additional lanes within the existing SR 37 median area upgradient of the Site HM-11 - Bennett's Dump area. INDOT has made a mitigation commitment to prevent I-69 drainage from increasing above the existing SR 37 levels extending along the northwest quadrant of the SR 37/SR 46 interchange area to address USEPA and IDEM concerns regarding changes in existing drainage at Site HM-11 - Bennett's Dump area. Blasting is not anticipated and will not be allowed adjacent to the site to prevent damage to the monitoring system (see **Figure 5.16-12**). Coordination with USEPA and IDEM has occurred throughout the Section 5 study and will continue through the design phase.

- **Caution** – Rural residences and farms were identified within the Section 5 corridor with the potential for ASTs and USTs to be present. These tanks are typically used for heating, the on-site storage of chemicals associated with pesticides and herbicides, and fuel for equipment. While no specific sites were identified, if any ASTs and/or USTs are encountered within Refined Preferred Alternative 8, then they will be removed in accordance with applicable state and federal laws and regulations. As part of the removal of the USTs, an impact assessment consisting of soil and/or groundwater testing will be performed.

- **Caution** – Coordination will occur with the utility and private owners of electrical transformers before and during construction for proper handling and removal of any transformers or pipes affected by Refined Preferred Alternative 8.

5.16.5 Summary

Table 5.16-1 summarizes the identified hazardous waste sites within Section 5 and suggested mitigation measures for each impacted site by the alternatives.

Table 5.16-1: Summary of Hazardous Waste Sites

Site ID	Site Name	Site Description	Affected Alternatives	Suggested Mitigation Measures
HM-1	C & H Stone 4000 Rockport Road, Bloomington	Active limestone mill and former quarry with ASTs located east of SR 37, northwest of Fullerton Pike and Rockport Road intersection	4, 5, 6, 8, and Refined Preferred Alternative 8	• Phase I ESA prior to acquisition southern edge of property due to long history of industrial operations; if recommended, a subsequent Phase II ESA • If encountered, excavate any contaminated materials
HM-2	Sam's Club 3205 West SR 45 Bloomington	3 USTs "Currently In Use" and a minor (5 gallon) oil spill	4, 5, 7, 8, and Refined Preferred Alternative 8	• Limited Phase II ESA for proposed property acquisition in proximity to USTs and fuel island • If encountered, excavate any contaminated materials

Table 5.16-1: Summary of Hazardous Waste Sites

Site ID	Site Name	Site Description	Affected Alternatives	Suggested Mitigation Measures
HM-3	Coca Cola 1701 Liberty Drive, Bloomington	Bottling facility located northwest of SR 45/2nd Street interchange with three former USTs	4 and 5	• No impact with Refined Preferred Alternative 8 • Final design contractor to confirm same condition (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface)
HM-4	Kmart #7402 3175 West 3rd Street, Bloomington	Former gasoline UST "Permanently Out of Service" location on the east side of the K-Mart parking lot	4 and 5	• No impact with Refined Preferred Alternative 8 • Final design contractor to confirm same condition (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface)
HM-5	Former Amoco (Unit 10116) 3100 West 3rd Street, Bloomington	Former gas station with five USTs/ closed with NFA but residual groundwater contamination located northwest of the intersection of SR 37 and SR 48/3rd Street.	None	• No impact with Refined Preferred Alternative 8 • Final design contractor to confirm same condition (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface)
HM-6	Former Marathon (Unit 2572) 2850 West 3rd Street, Bloomington	Former gas station with four USTs "Permanently Out of Service" located northeast of the intersection of SR 37 and SR 48/3rd Street.	None	• No impact with Refined Preferred Alternative 8 • Final design contractor to confirm same condition (no excavation outside of proposed Refined Preferred Alternative 8 construction limits and less than 10 feet below ground surface)
HM-7	Lemon Lane Landfill Bloomington	Superfund site at 10-Acre landfill used for PCB-containing wastes; containment cap	None	• Avoidance by maintaining I-69 location at existing SR 37 location. • No impact with Refined Preferred Alternative 8
	Illinois Central Spring Bloomington	Superfund site at discharge point of ILC Spring impacted by Lemon Lane Landfill; treatment of discharge	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Commitment to prevent additional highway drainage from entering ILCS recharge/treatment area.
HM-8	Former Hanna Trucking/United Rental/O'Mara Contractor 2520 Industrial Drive, Bloomington	Construction yard with two USTs and four ASTs that have been removed	6, 7, 8, and Refined Preferred Alternative 8	• Refined Preferred Alternative 8 is outside of former contamination area and minimal excavation expected • Final design contractor to confirm same condition (no excavation outside of proposed Refined Preferred Alternative 8 construction limits and less than 10 feet below ground surface)
HM-9	Sturgis Auto Salvage 2810 West Hensonburg Road Bloomington	Towing, auto salvage, and repair facility	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Phase II ESA due to history of automotive salvage operations • If encountered, excavate any contaminated materials

Table 5.16-1: Summary of Hazardous Waste Sites

Site ID	Site Name	Site Description	Affected Alternatives	Suggested Mitigation Measures
HM-10	Dotlich Crane Service Crescent Road & West 17th Street, Bloomington	Crane, equipment, and maintenance building and yards with one diesel AST.	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Phase I ESA due to acquisition of the entire property; if recommended, a subsequent Phase II ESA • If encountered, excavate any contaminated materials
HM-11	Bennett Stone Quarry SR 37 and SR 46, Bloomington	4-Acre former quarry pit used as a dump including PCB-containing waste. Water diversion, monitoring, and potential on-site treatment.	None	• Avoidance by maintaining existing SR 37, SR 46, and Arlington Rd. • No impact with Refined Preferred Alternative 8 • Commitment to prevent additional highway drainage from entering Bennett area along northwest SR 46/SR 37 (I-69) interchange
HM-12	INDOT Sub-District 2965 North Prow Road, Bloomington	Repair and maintenance buildings and yard; new and used oil in drums and an AST.	None	• No impact with Refined Preferred Alternative 8 • Final design contractor to confirm same condition (no excavation outside of existing SR 37 right-of-way and less than 10 feet below ground surface)
HM-13	Hoosier Energy 7398 North SR 37, Bloomington	Utility headquarters, electrical distribution center, transformer service and maintenance facility; 4 USTs, staged transformers, drums, and 2 ASTs (transformer oil), and equipment storage buildings and yards.	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Limited Phase II ESA for the proposed retaining wall or replacement of existing SR 37 drainage along western edge of the property • If encountered, excavate any contaminated materials
HM-14	Johnson Oil Bigfoot #071 (BP/Circle K) 7340 North Wayport Road, Bloomington	3 USTs “Permanently out of Service”; four USTs “Currently In Use”; and a LUST with “No Further-Action”	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Limited Phase II ESA for proposed property acquisition area along the UST locations along the western edge of the property and downgradient of the site to the south • If encountered, excavate any contaminated materials
HM-15	Bloomington Auto Parts 7650 North SR 37, Bloomington	IDEM report of “unknown material” affecting soil; concern for hazardous materials due to current and historical use as a long-term storage auto salvage yard.	None	• Limited Phase II ESA along existing SR 37 right-of-way due to history of violations and automotive salvage operations • If encountered, excavate any contaminated materials
---	---	Residence and farm USTs and ASTs. No specific sites identified.	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Soil and groundwater impact assessment and remove tanks in accordance with applicable state and federal laws and regulations.
---	---	Electrical Transformers (Multiple Locations)	4, 5, 6, 7, 8, and Refined Preferred Alternative 8	• Coordinate with owner for proper handling/removal if affected.

Section 5.16 Figure Index

(Figures follow this index.)

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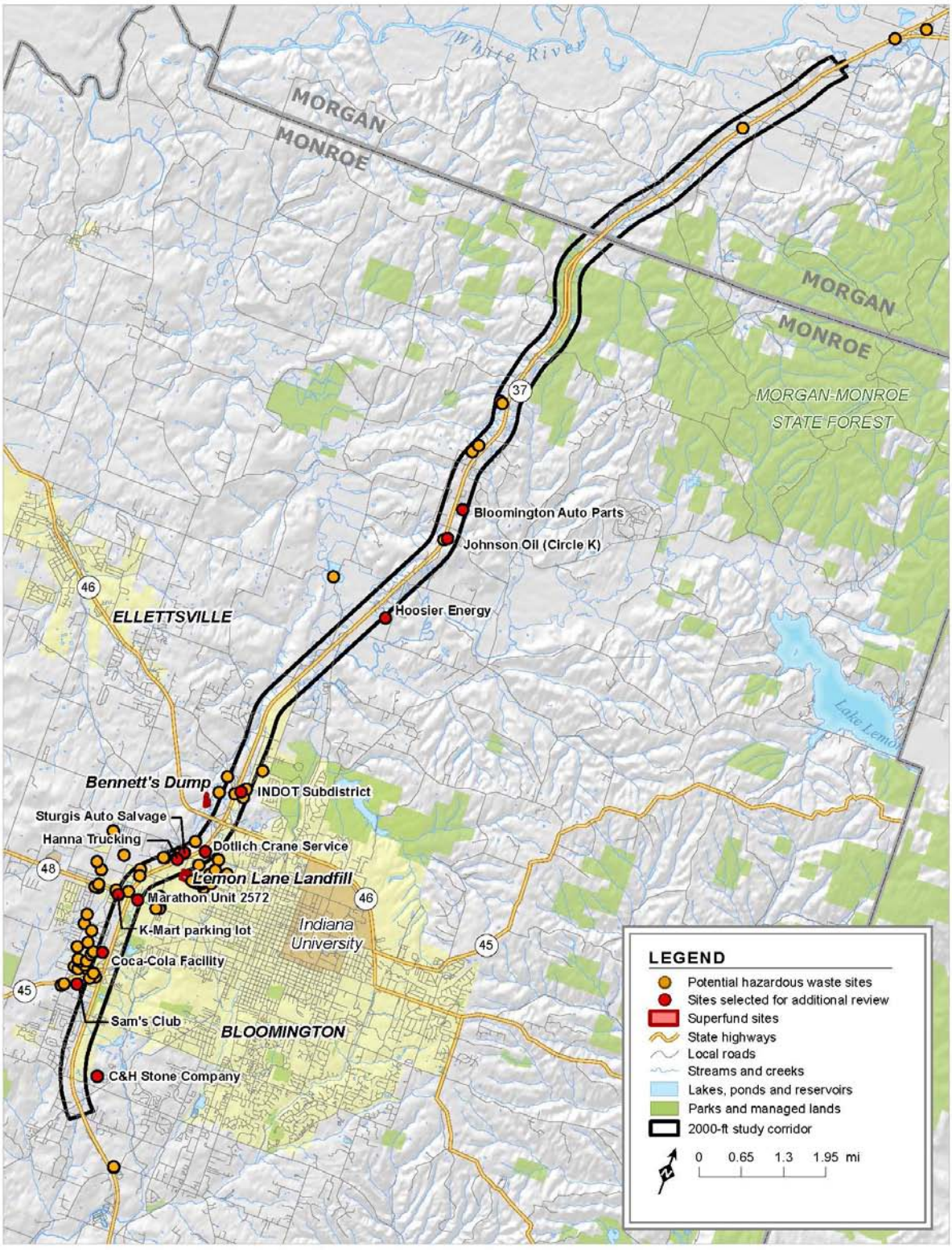

Figure 5.16-1: Potential Hazardous Waste Sites in the I-69 Section 5 Study Area

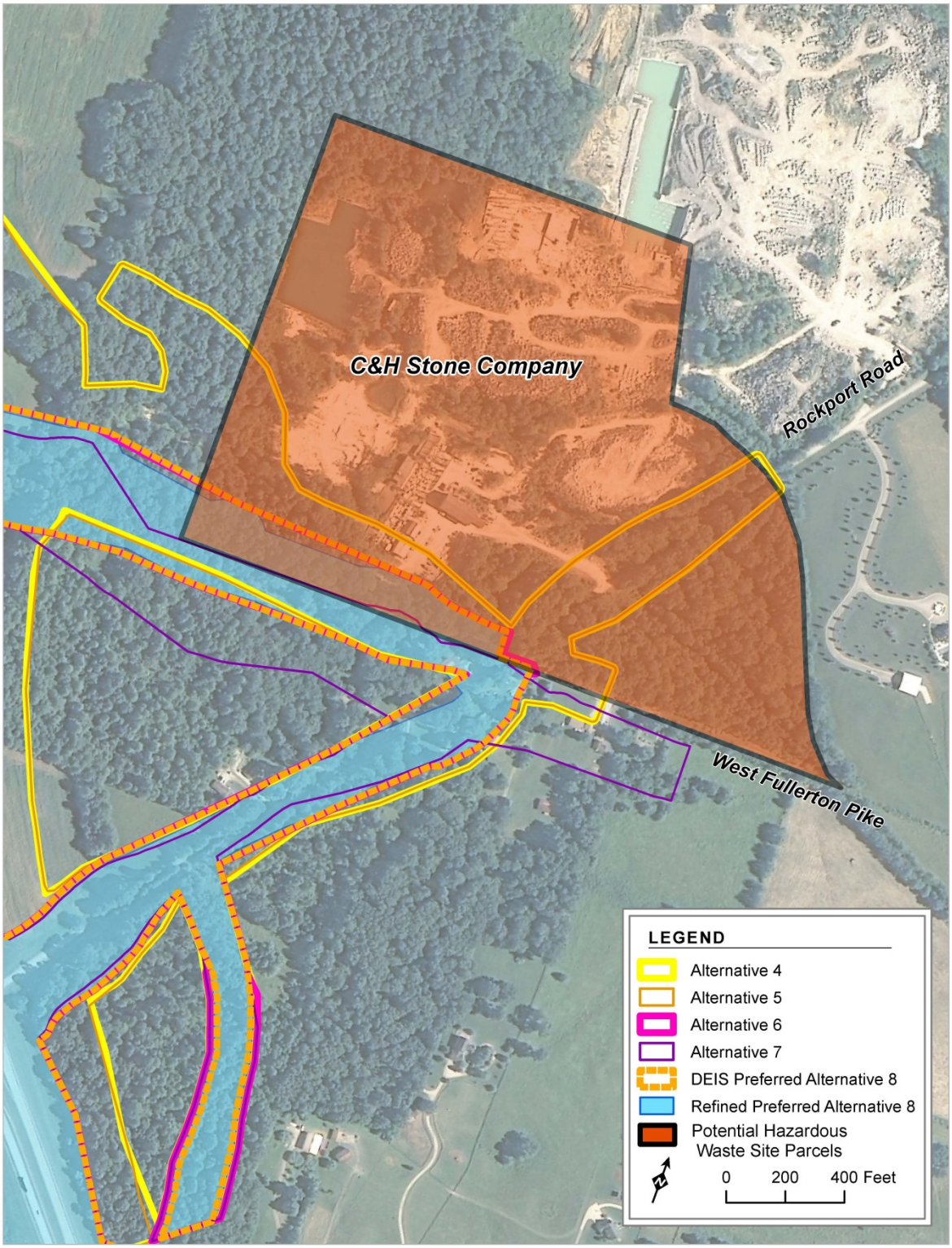

Figure 5.16-2: Potential Hazardous Waste Site No. HM-1 – C&H Stone Company

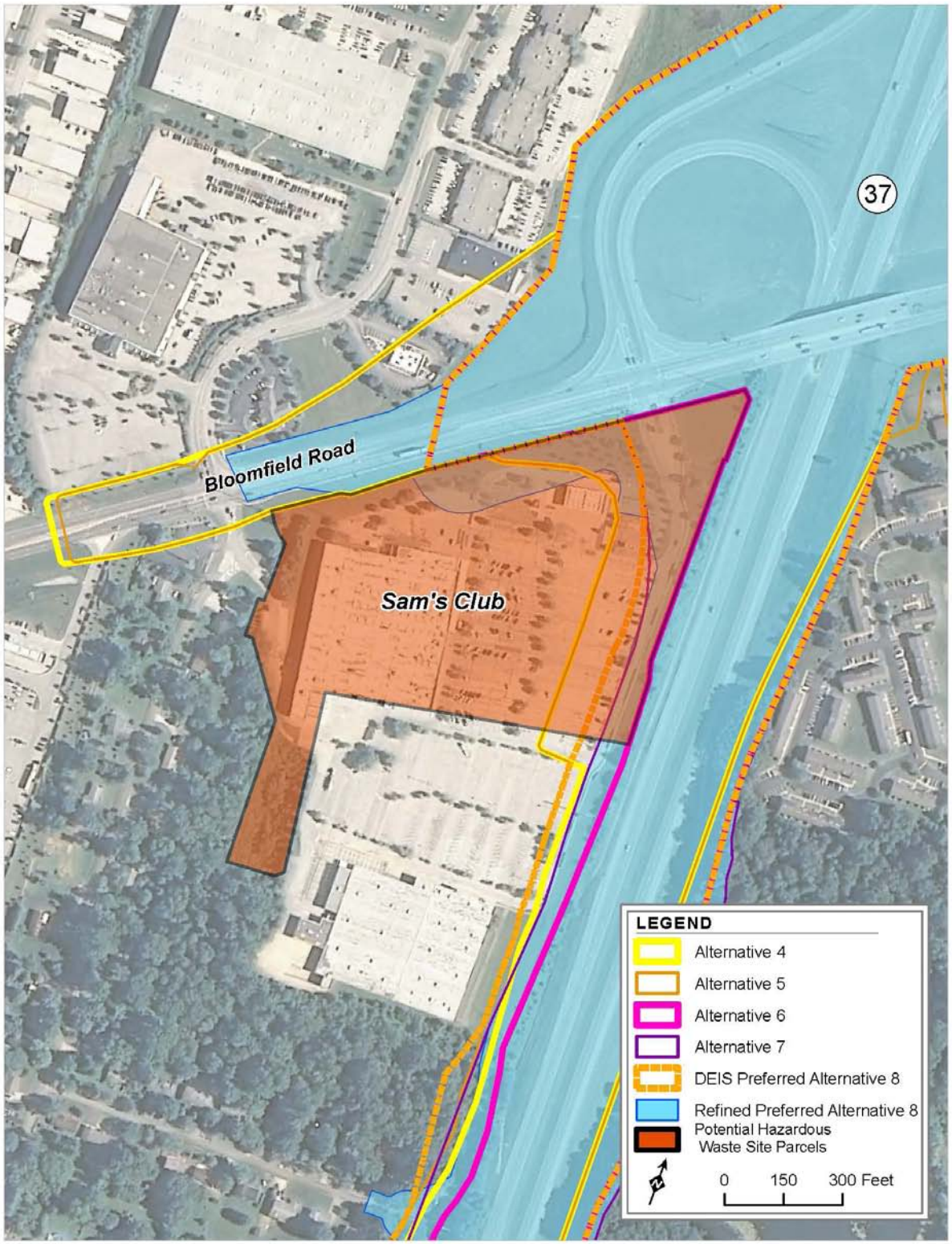

Figure 5.16-3: Potential Hazardous Waste Site HM-2 – Sam's Club

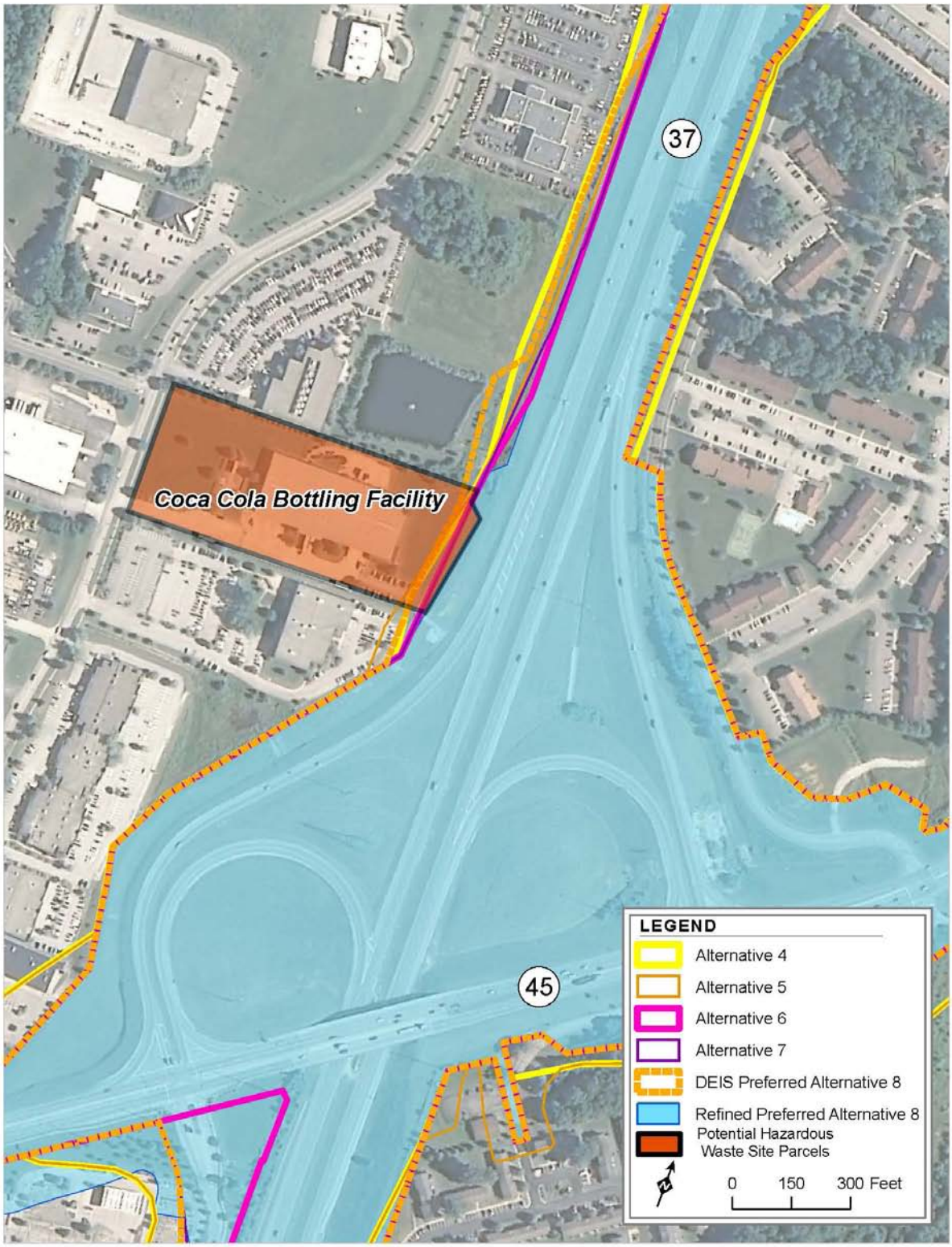

Figure 5.16-4: Potential Hazardous Waste Site HM-3 - Coca Cola Bottling Facility

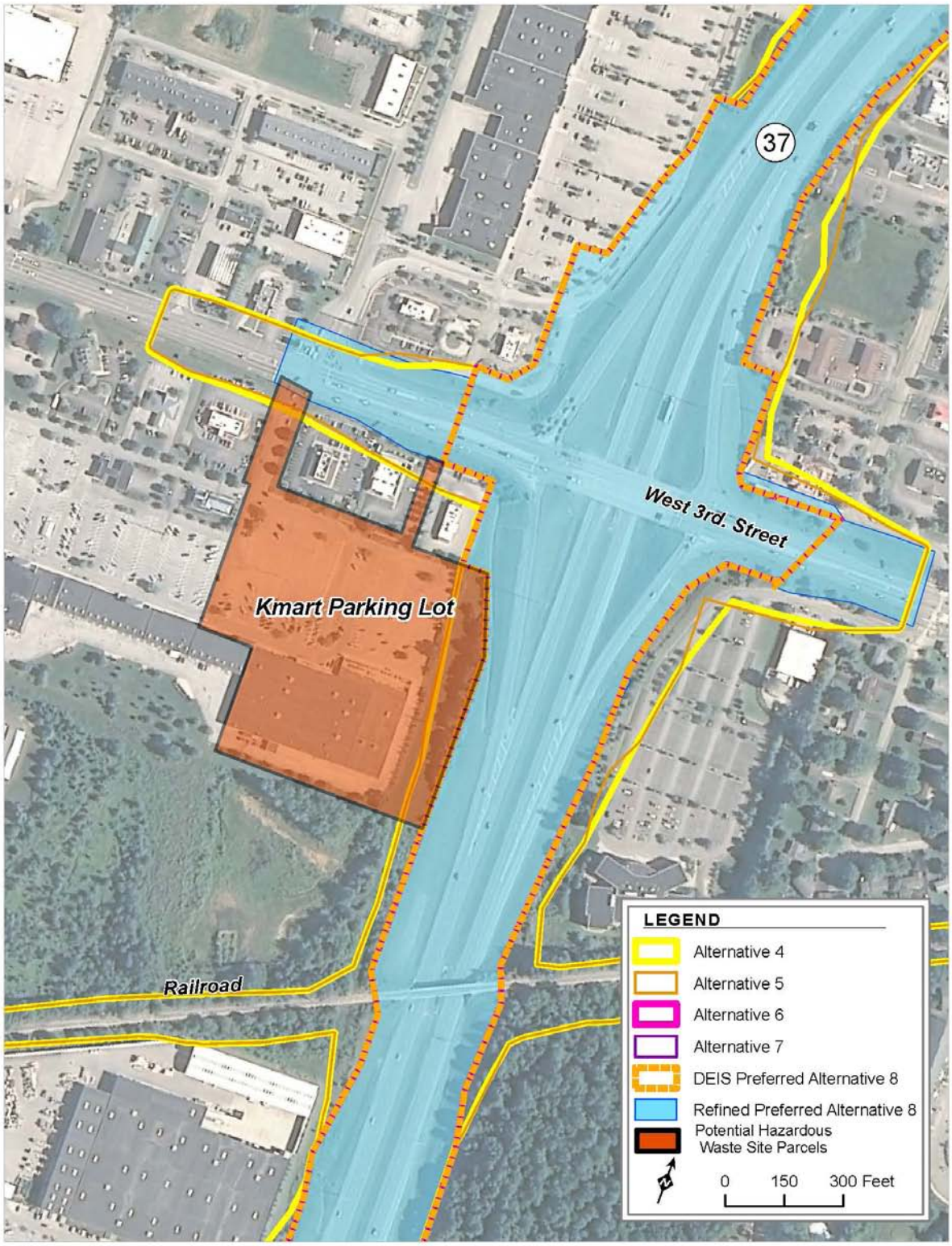

Figure 5.16-5: Potential Hazardous Waste Site No. HM-4 - Kmart Parking Lot

Figure 5.16-6: Potential Hazardous Waste Site No. HM-5 - Former Amoco Unit 101106

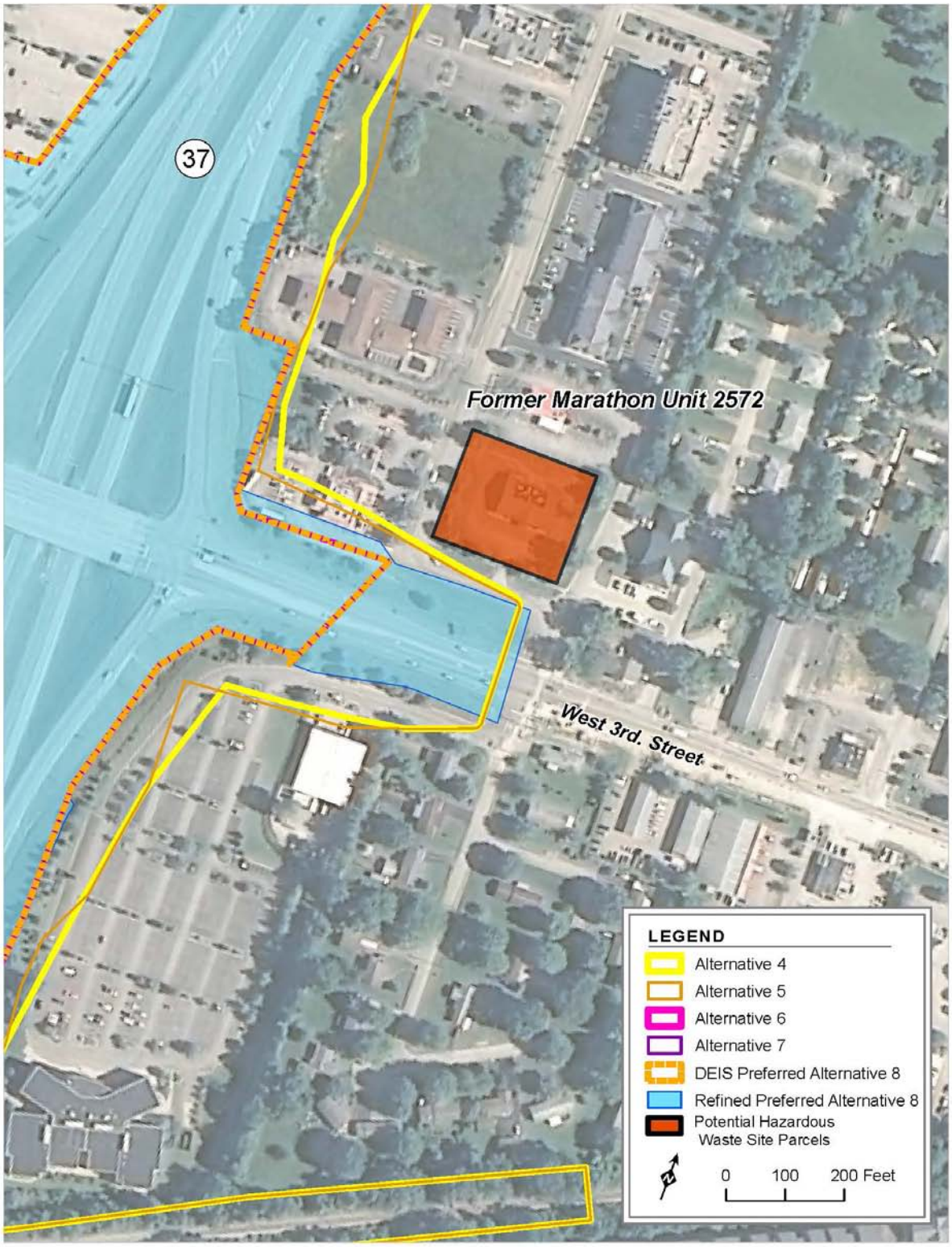

Figure 5.16-7: Potential Hazardous Waste Site No. HM-6 - Former Marathon Unit 2572

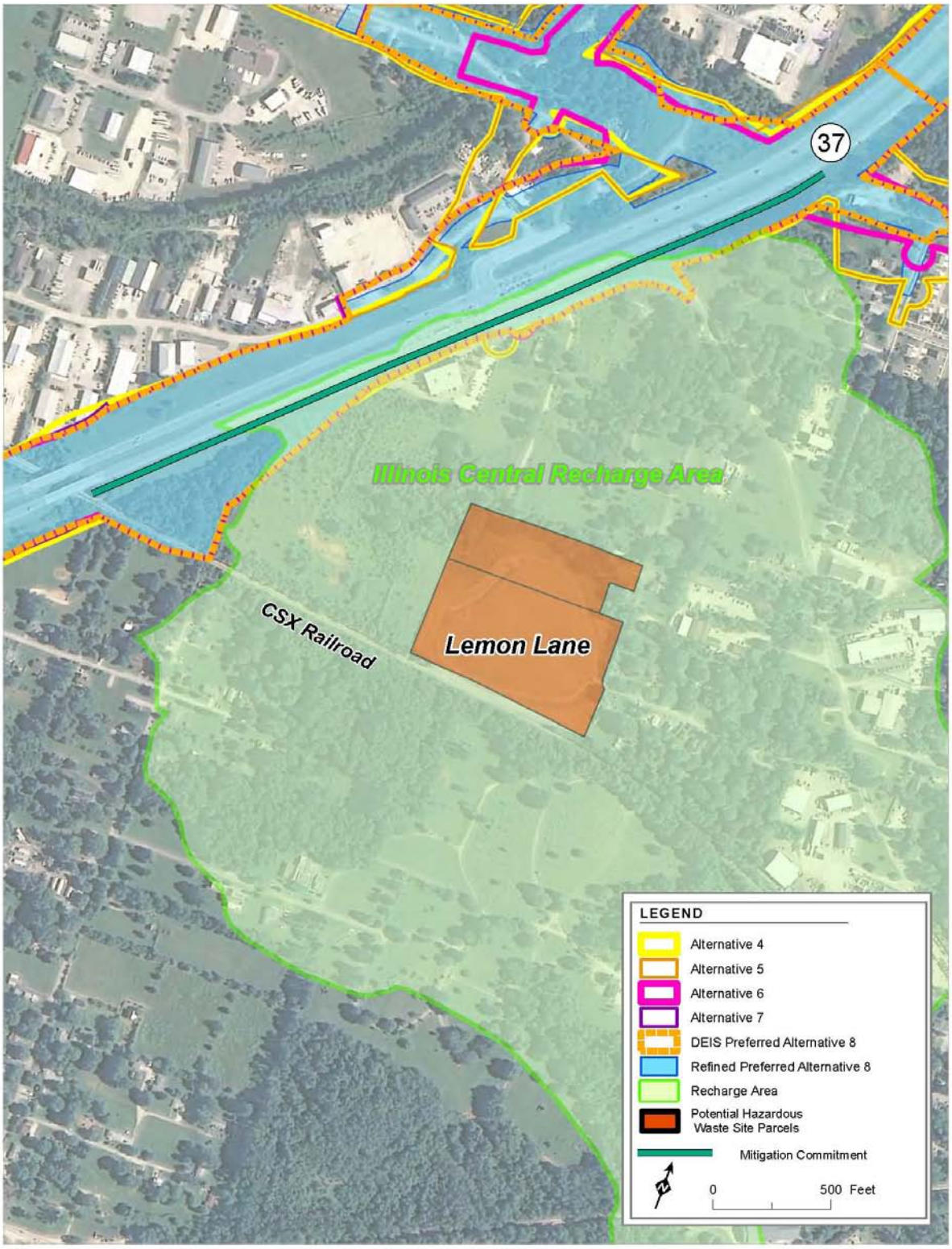

Figure 5.16-8: Potential Hazardous Waste Site No. HM-7 – Lemon Lane Landfill

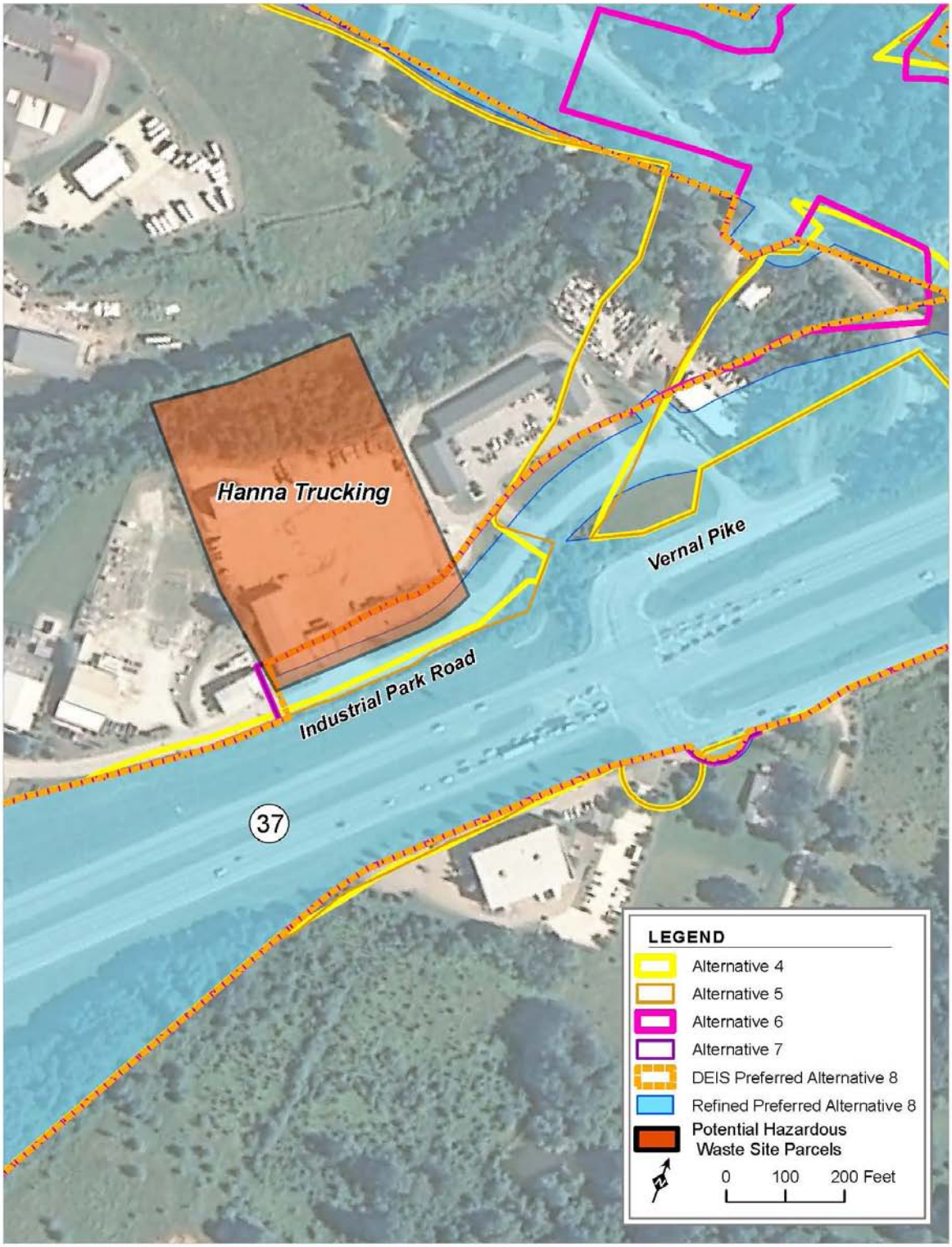

Figure 5.16-9 Potential Hazardous Waste Site No. HM-8 – Hanna Trucking (aka United Rentals/O'Mara Construction)

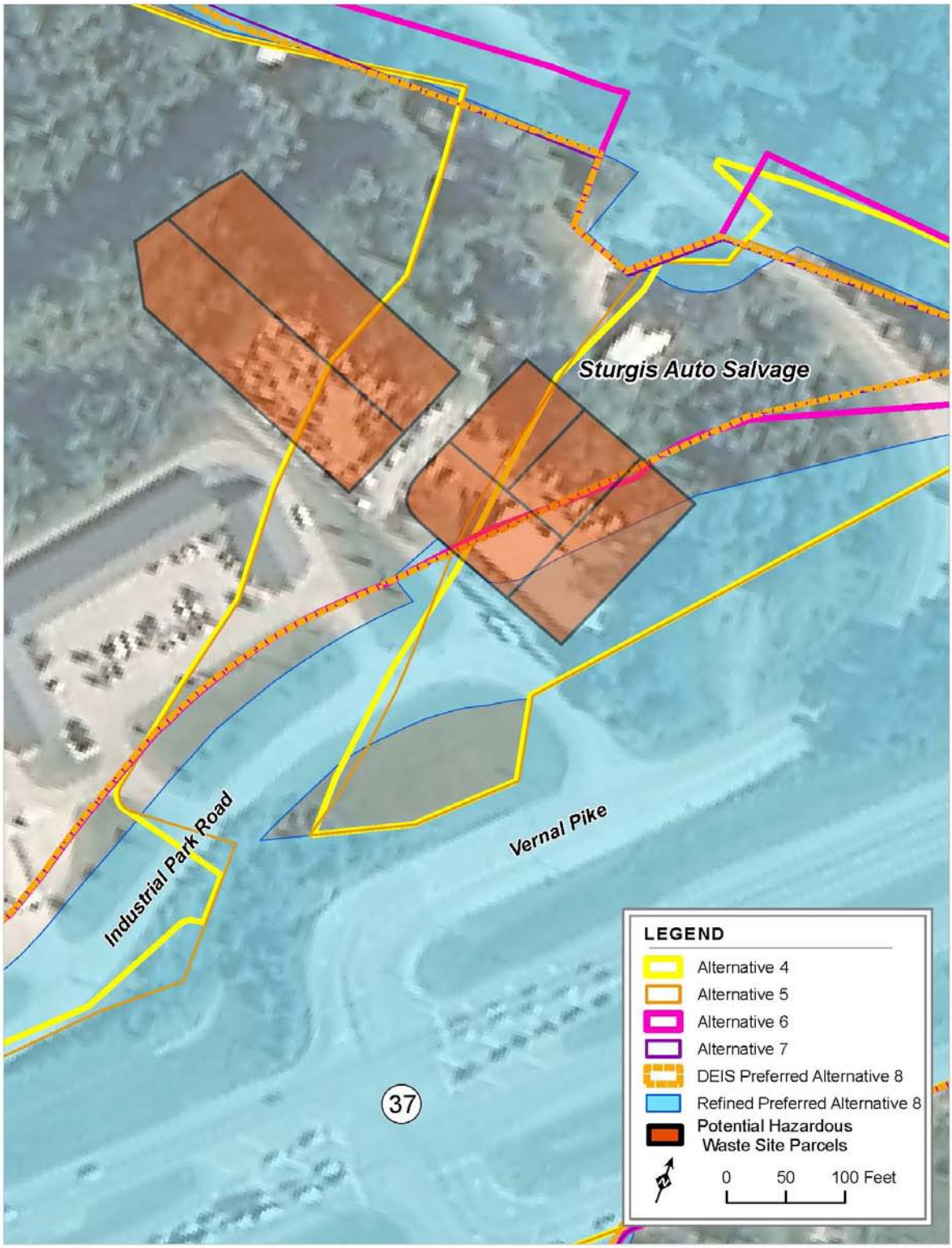

Figure 5.16-10: Potential Hazardous Waste Site No. HM-9 – Sturgis Auto Salvage

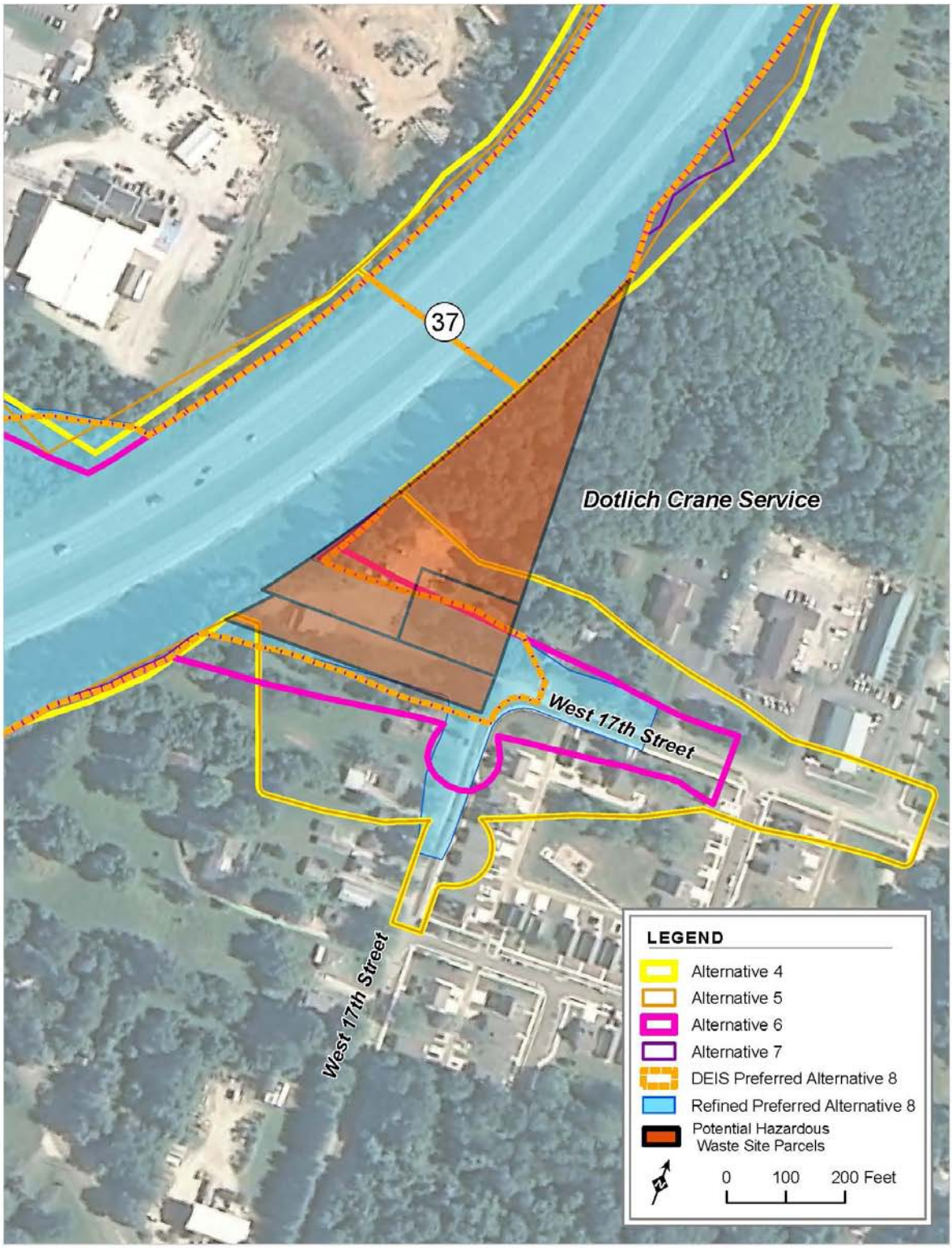

Figure 5.16-11: Potential Hazardous Waste Site No. HM-10 – Dotlich Crane Service

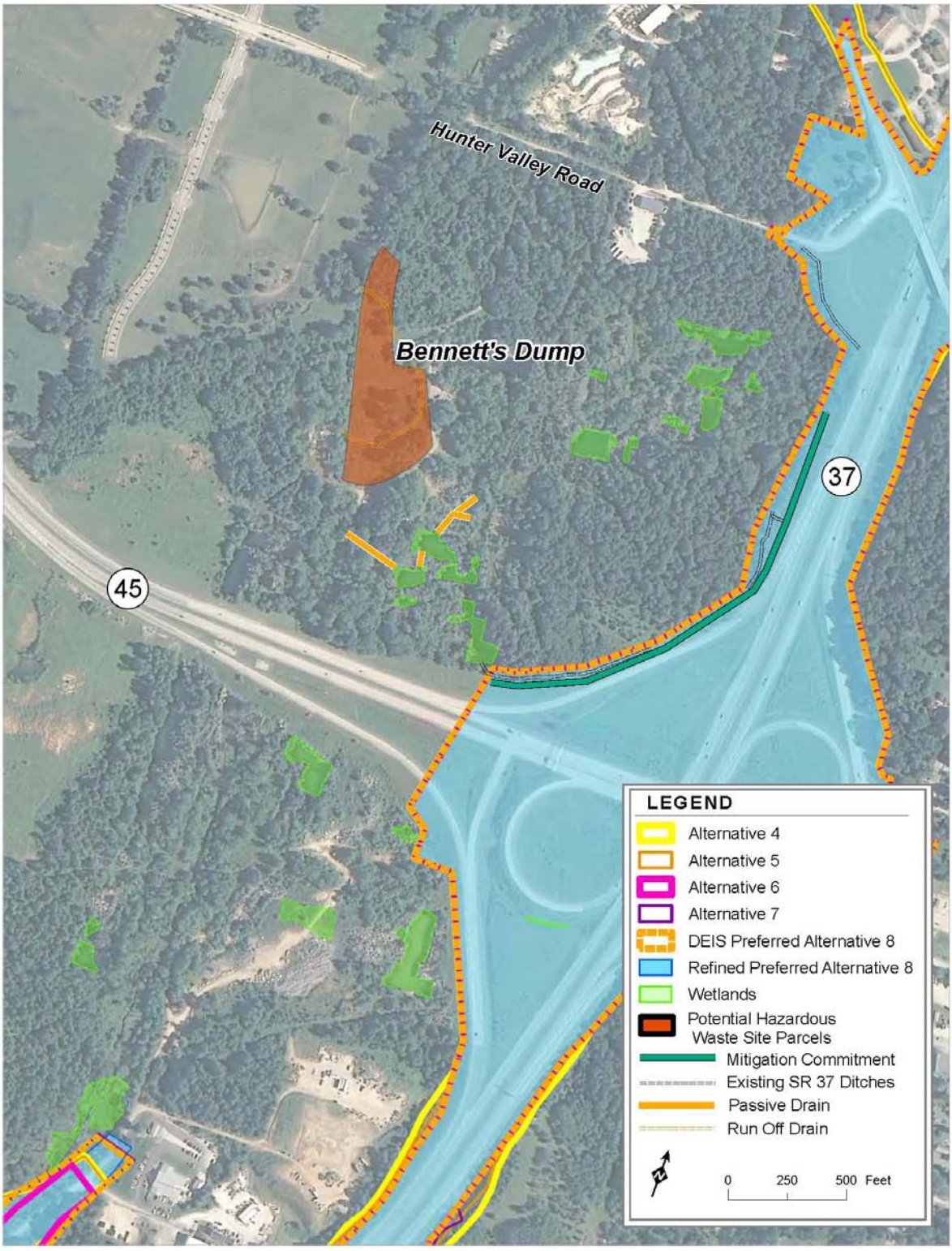

Figure 5.16-12: Potential Hazardous Waste Site No. HM-11 – Bennett Stone Quarry (aka Bennett's Dump)

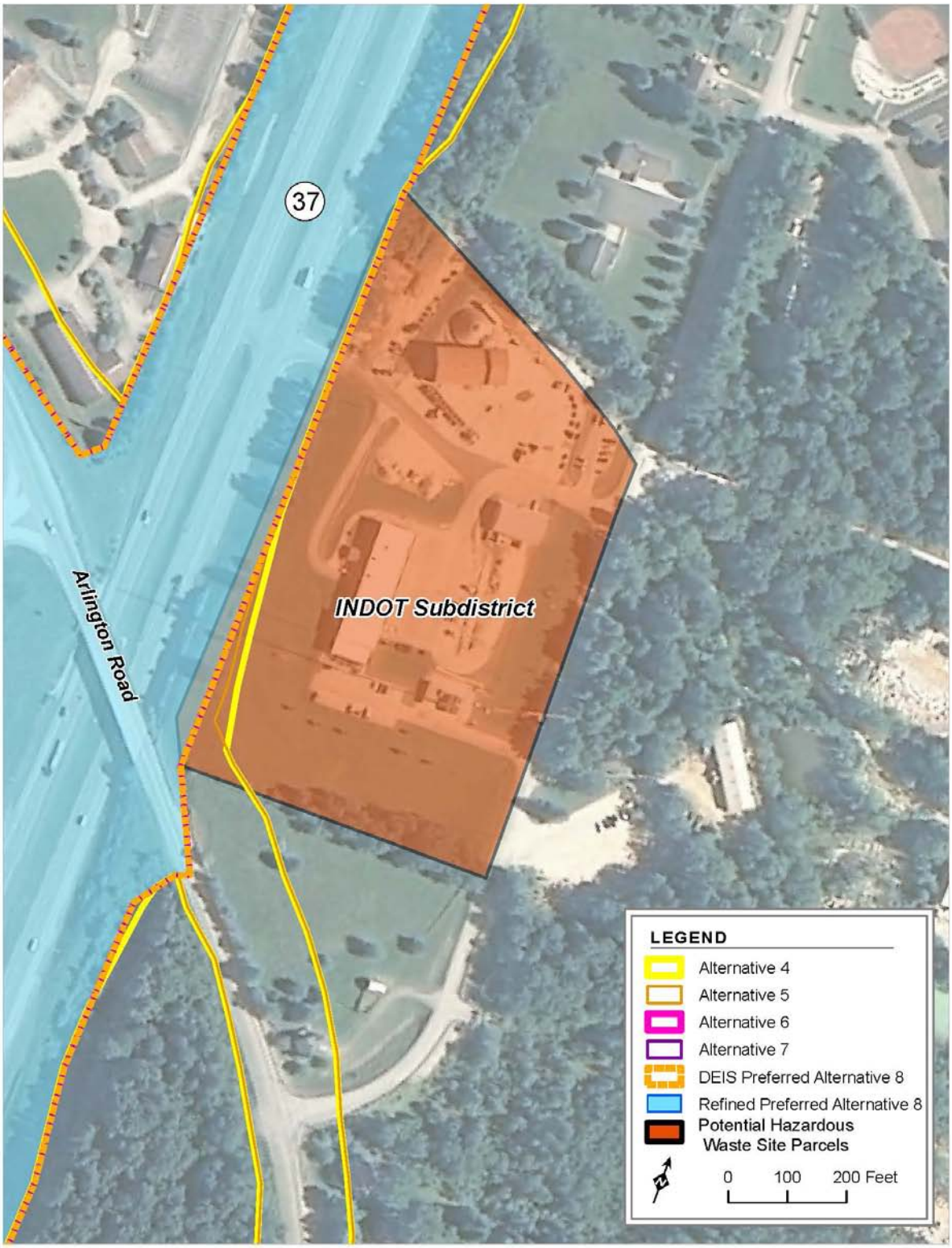

Figure 5.16-13: Potential Hazardous Waste Site No. HM-12 – INDOT Subdistrict

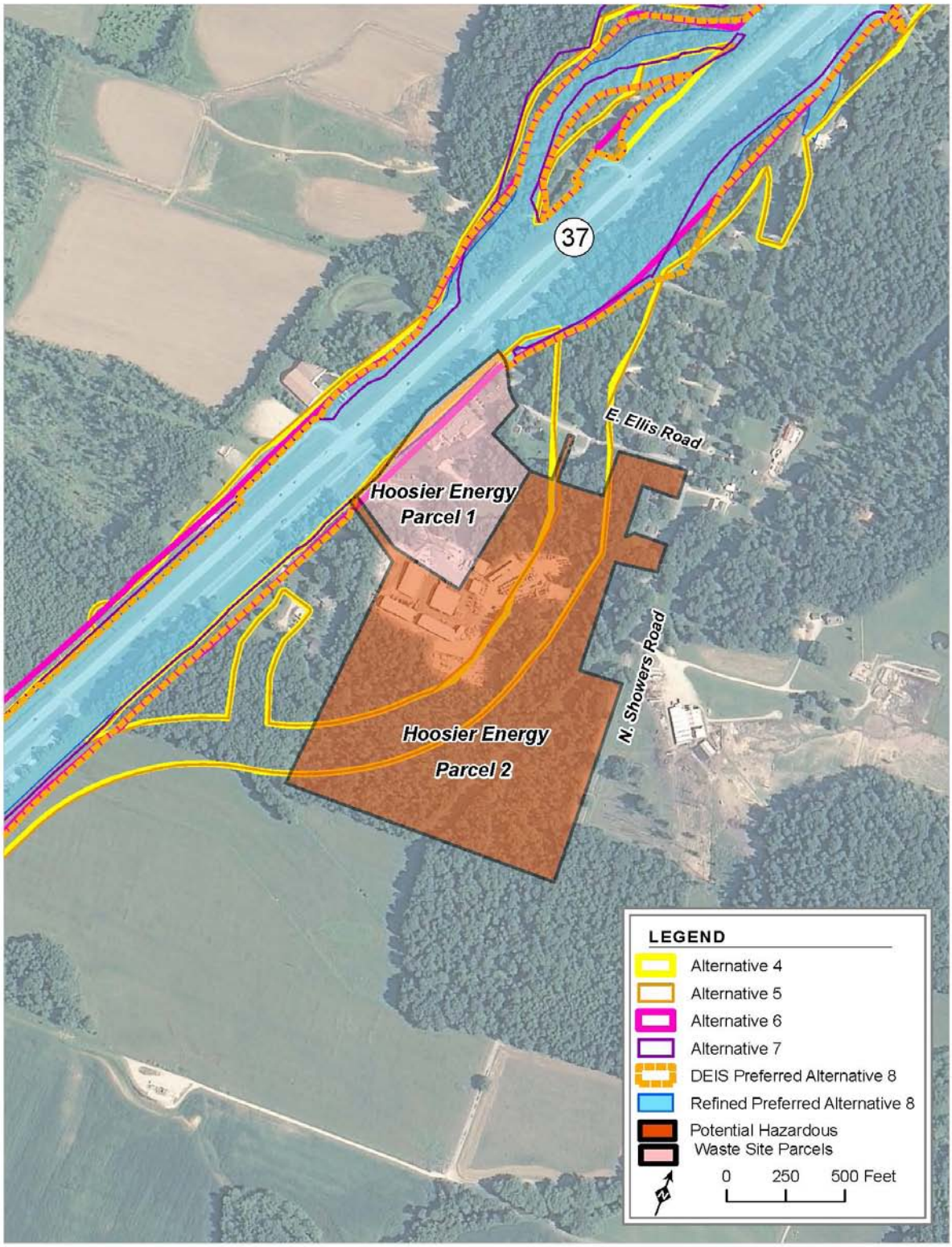

Figure 5.16-14: Potential Hazardous Waste Site No. HM-13 – Hoosier Energy

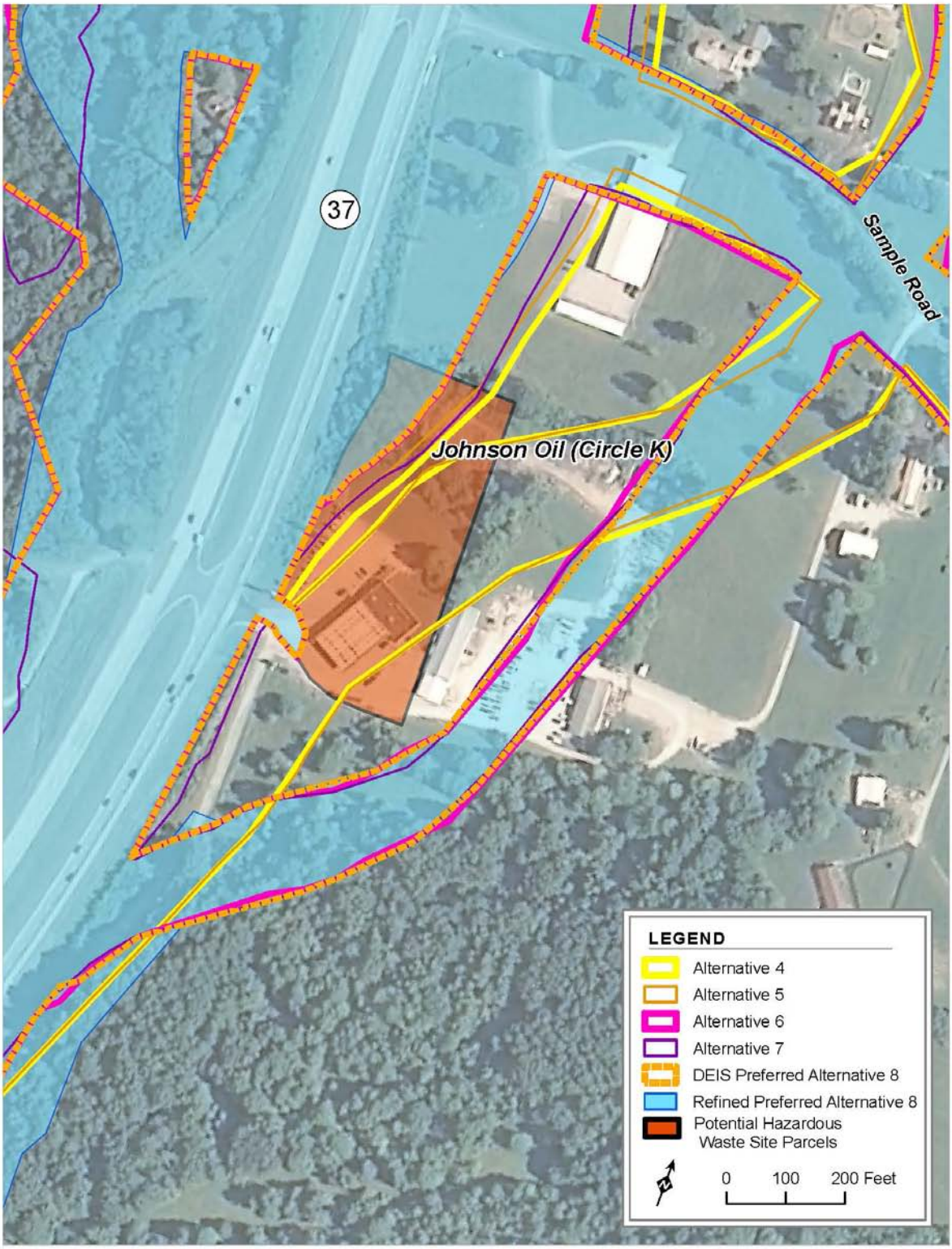

Figure 5.16-15: Potential Hazardous Waste Site No. HM-14 – Johnson Oil Bigfoot (aka BP/Circle K)

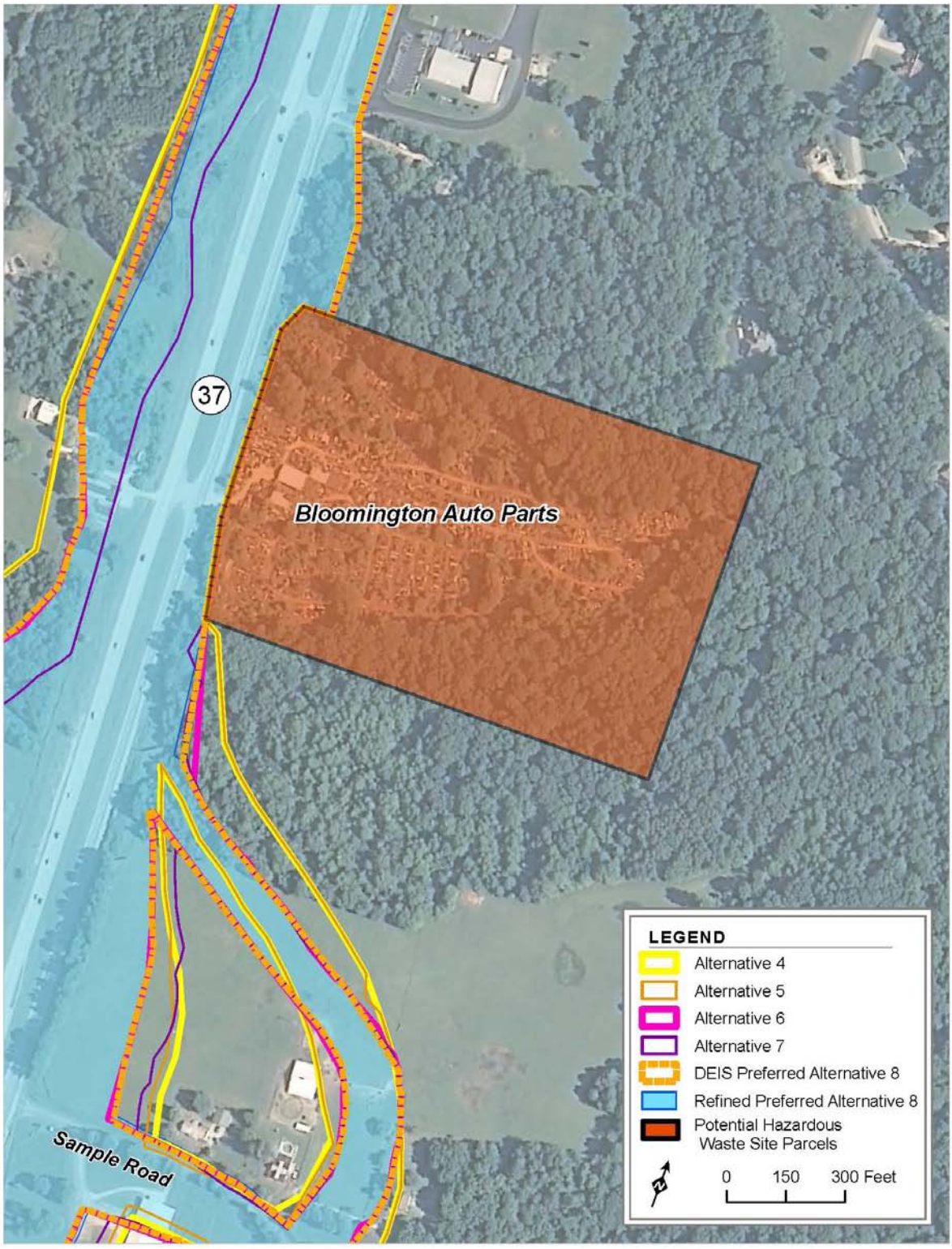

Figure 5.16-16: Potential Hazardous Waste Site No. HM-15 – Bloomington Auto Parts

Figure 5.16-17: Potential Hazardous Waste Sites – C&H Stone Company (located east of SR 37 in northwest intersection of Fullerton Pike and Rockport Road)

Figure 5.16-18: Potential Hazardous Waste Sites – Sam's Club (located southwest of SR 37 and SR 45/2nd Street interchange)

Figure 5.16-19: Potential Hazardous Waste Sites - Coca Cola Bottling Facility (located northwest of SR 37 and SR 45/2nd Street interchange)

Figure 5.16-20: Potential Hazardous Waste Sites - Kmart Parking Lot (located southwest of SR 37 and SR 48/3rd Street interchange)

Figure 5.16-21: Potential Hazardous Waste Sites - Former Amoco Unit 10116 (currently White Castle fast food restaurant, located northwest of SR 37 and SR 48/3rd Street interchange)

Figure 5.16-22: Potential Hazardous Waste Sites - Former Marathon Unit 2572 (currently a restaurant, located northeast of SR 37 and SR 48/3rd Street interchange)

Figure 5.16-23: Potential Hazardous Waste Sites – Lemon Lane Landfill (located east of intersection of SR 37 and Vernal Pike)

Figure 5.16-24: Potential Hazardous Waste Sites – Hanna Trucking (aka United Rentals/O'Mara Construction, located southwest of intersection of SR 37 and Vernal Pike)

Figure 5.16-25: Potential Hazardous Waste Sites – Sturgis Auto Salvage (located southwest of the intersection of SR 37 and Vernal Pike)

Figure 5.16-26: Potential Hazardous Waste Sites – Dotlich Crane Service (located northeast of the intersection of SR 37 and Vernal Pike)

Figure 5.16-27: Potential Hazardous Waste Sites – Bennett Stone Quarry (located northwest of the SR 37 and SR 46 interchange)

Figure 5.16-28: Potential Hazardous Waste Sites – INDOT Subdistrict (located northeast of the SR 37 and SR 46 interchange)

Figure 5.16-29: Potential Hazardous Waste Sites –Hoosier Energy (located on eastside of SR 37 between Walnut Street and Sample Road)

Figure 5.16-30: Potential Hazardous Waste Sites –Johnson Oil Bigfoot (aka BP/Circle K, located southeast of the intersection of SR 37 and Sample Road)

Figure 5.16-31: Potential Hazardous Waste Sites – Bloomington Auto Parts (located northeast of the intersection of SR 37 and Sample Road)

5.17 Bald Eagles, Federal and State Threatened and Endangered Species

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8". The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8".

Since the DEIS, the following substantive changes have been made to this section:

- **Section 5.17.1.1**, *Federally Listed Threatened and Endangered Species* – Updated **Table 5.17-1** with information on recent National Environmental Policy Act (NEPA) and Section 7 consultation with United States Fish and Wildlife Service (USFWS).

- **Section 5.17.1.1**, *Federally Listed Threatened and Endangered Species* – Added information in footnote 6 regarding the identification of two additional Indiana bat maternity colonies in Section 5.

- **Section 5.17.1.1**, *Federally Listed Threatened and Endangered Species* – Added definition of Winter Action Area (WAA).

- **Section 5.17.1.1**, *Federally Listed Threatened and Endangered Species* – Updated with information regarding reinitiation of Tier 1 consultation and issuance of Amendment 2 to the revised Tier 1 Biological Opinion (BO), and the Section 5 Tier 2 Biological Assessment (BA) and BO.

- **Section 5.17.3.2**, *Federally-Listed Species* – Added discussion on two additional Indiana bat maternity colonies and information on USFWS conclusions regarding maternity colonies from Amendment 2 to the revised Tier 1 BO.

- **Section 5.17.3.2**, *Federally-Listed Species* – Provided information on the Section 5 Tier 2 BA and BO, and updated forest impacts associated with Refined Preferred Alternative 8.

- **Section 5.17.3.3**, *State-Listed Species* – Added footnote regarding Cave B under cave invertebrates discussion.

- **Section 5.17.4**, *Mitigation* – Added discussion of potential forest mitigation sites and updated forest and wetland impact and mitigation totals.

5.17.1 Introduction

5.17.1.1 Federally Listed Threatened and Endangered Species

Threatened and endangered species are recognized by federal and state agencies as being in danger of extinction (endangered) or being sufficiently compromised that they are at risk of becoming endangered (threatened) either nationally or in a state. The assessment of endangered

and threatened species is concerned with preservation and conservation of such species and their sustainability. This chapter will discuss both federally-listed and state-listed species.

Federally-listed species are protected under Section 7 (Section 7) of the Endangered Species Act (ESA). Section 7 directs all federal agencies, in consultation with the United States Fish and Wildlife Service (USFWS), to ensure that their actions do not jeopardize listed species or destroy or adversely modify Critical Habitat. Section 2 of the ESA also directs federal agencies to use their existing authorities to conserve threatened and endangered species.

Consultation with the USFWS is divided into two separate types for this project, informal consultation and formal consultation.

Formal and informal consultation with USFWS was conducted during the Tier 1 studies for the I-69 Evansville to Indianapolis project. The consultation required the Indiana Department of Transportation (INDOT) and Federal Highway Administration (FHWA) to submit a Tier 1 BA of potential impacts of the Evansville-to-Indianapolis project on threatened and endangered species. The process concluded with the issuance of a Tier 1 BO, which made determinations of effect on the three federally listed species potentially affected by the project. USFWS determined there would be no adverse effect upon one species, the eastern fanshell mussel; effects were not likely to jeopardize the continued existence of two other species, the Indiana bat and the bald eagle.[1] This formal consultation also required FHWA and INDOT to submit a Tier 2 BA for each Tier 2 Section of the project.

In 2006, coordination with USFWS during the Tier 2 studies 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 shows no bald eagle nests or eastern fanshell mussels within the I-69 corridor. Thus, there has been no re-initiation of formal consultation on these species.

The re-initiation of formal consultation resulted in the preparation of an Addendum to the Tier 1 BA which was provided to the USFWS. Also, a finding was made that the project would not adversely modify any Critical Habitat of the Indiana bat. USFWS concurred with the determinations and issued a revised Tier 1 BO (see **Appendix BB**, *Revised Tier 1 Biological Opinion and Amendments*), which updated its finding on the Indiana bat and provided direction to be carried out during Tier 2 consultation.

[1] In a final rule issued on July 9, 2007, the USFWS removed the bald eagle from the list of threatened and endangered species established under the ESA. The bald eagle continues to be protected under the Bald and Golden Eagle protection Act (16 U.S.C. §§ 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712). In particular, the Bald and Golden Eagle Protection Act prohibits the incidental taking of a bald eagle except as allowed by a permit granted by the USFWS. On June 25, 2009, the USFWS issued INDOT and FHWA a permit under the Bald and Golden Eagle Protection Act for the I-69 Evansville to Indianapolis project based upon the incidental take permit under the ESA, 50 C.F.R. Part 22. FHWA and INDOT will comply with the Bald and Golden Eagle Protection Act permit requirements established by USFWS, which include Terms and Conditions associated with the Incidental Take Statement.

Tier 1 Informal Consultation

FHWA and INDOT began consulting with USFWS prior to initiation of Tier 1 of this project. Informal consultation began May 18, 1999, prior to the issuing of the Notice of Intent for the Tier 1 project on January 5, 2000, when the resource agency meeting on the tiered approach was conducted. At this time, resource agencies were consulted to guide the analysis of resource impacts within the context of a tiered study. Since that time, FHWA and INDOT have consulted extensively with USFWS concerning this project.

On July 1, 2002, USFWS provided FHWA and INDOT a list of species for consideration for the 26-county Study Area of southwest Indiana (see Appendix Y of the Tier 1 Final Environmental Impact Statement [FEIS]). The federally-listed endangered and threatened species that may be present within the proposed project counties and were considered in the environmental evaluation for the I-69 Tier 1 Final Environmental Impact Statement (FEIS) included:

1. Indiana bat (*Myotis sodalis*) Endangered
2. Bald eagle (*Haliaeetus leucocephalus*) Threatened
3. American burying beetle (*Nicrophorus americanus*) Endangered
4. Eastern fanshell mussel (*Cyprogenia stegaria*) Endangered
5. Fat pocketbook mussel (*Potamilus capax*) Endangered
6. Rough pigtoe mussel (*Pleurobema plenum*) Endangered

On July 22, 2002, the Tier 1 DEIS was signed. On November 14, 2002, the USFWS responded with comments to the Tier 1 DEIS. These comments addressed, among other things, impacts to threatened and endangered species. USFWS indicated the following:

> Because all of the Build Alternatives are likely to have some adverse effects on federally listed species or their habitats, the USFWS anticipates that formal consultation under section 7(a)2 of the ESA will be required for this project if a build alternative is selected. If INDOT and FHWA select a build alternative as their preferred alternative, they will need to prepare a biological assessment (BA) to analyze the effects the preferred alternative will have on federally listed species and make an 'effects determination.' Once this determination has been made, FHWA should submit the BA and determination to the FWS's Bloomington Field Office and request concurrence with the determination or that formal consultation be initiated. If adverse effects are unavoidable, formal consultation is required and would conclude within a maximum of 135 days (unless a time extension was mutually agreed to).

After identification of the Tier 1 Preferred Alternative 3C on January 9, 2003, by then-Governor Frank O'Bannon, USFWS narrowed the number of federal species for consideration from six to three based upon their geographic distribution. The three federal species that may be present in the Preferred Alternative 3C project area include:

1. Indiana bat (*Myotis sodalis*) Endangered
2. Bald eagle (*Haliaeetus leucocephalus*) Threatened[2]
3. Eastern fanshell mussel (*Cyprogenia stegaria*) Endangered

An agency coordination meeting was held March 11, 2003, at the Bloomington Field Office (BFO) of the USFWS to discuss, among other things, Section 7 consultation.

A Draft BA was submitted to USFWS March 26, 2003, for review. The BA described the Indiana bat, bald eagle, and eastern fanshell mussel and potential impacts to those species. USFWS reviewed the Draft BA and provided comments to FHWA and INDOT on May 30, 2003. The document was revised, and a Final BA was submitted to the USFWS on July 18, 2003.

Tier 1 Formal Consultation

Formal Section 7 consultation for Tier 1 was initiated with USFWS by FHWA and INDOT July 21, 2003. On August 22, 2003, USFWS acknowledged receipt and completeness of the formal consultation and initiation package. In that letter, USFWS stated that, "we concur that the construction, operation, and maintenance of Alternative 3C of I-69 is not likely to adversely affect fanshell mussels. Therefore, this precludes the need for further consultation regarding the fanshell mussel and this project as required under Section 7 of the Endangered Species Act."

A BO, which included an Incidental Take Statement,[3] was received by INDOT and FHWA on December 3, 2003. The BO provided conclusions that "Alternative 3C of I-69 from Evansville to Indianapolis, as proposed, is not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle," and "no destruction or adverse modification of [Indiana bat] Critical Habitat is anticipated. No Critical Habitat has been designated for the bald eagle."

Table 5.17-1 provides a summary of the NEPA/Section 7 consultation for Tier 1 and Tier 2 as of March 2013 of this project.

[2] In a final rule issued on July 9, 2007, the USFWS removed the bald eagle from the list of threatened and endangered species established under the ESA. The bald eagle continues to be protected under the Bald and Golden Eagle protection Act (16 U.S.C. §§ 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712). In particular, the Bald and Golden Eagle Protection Act prohibits the incidental taking of a bald eagle except as allowed by a permit granted by the USFWS. On June 25, 2009, the USFWS issued INDOT and FHWA a permit under the Bald and Golden Eagle Protection Act for the I-69 Evansville to Indianapolis project based upon the incidental take permit under the ESA, 50 C.F.R. Part 22. FHWA and INDOT will comply with the Bald and Golden Eagle Protection Act permit requirements established by USFWS, which include Terms and Conditions associated with the Incidental Take Statement.

[3] Section 9 of the Endangered Species 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 provided that such taking is in compliance with the terms and conditions developed prior to the action and set forth in an Incidental Take Statement.

Table 5.17-1: Summary of NEPA and Section 7 Consultation History for I-69, Tier 1 & Tier 2

Date	Event / Action
May 18, 1999	Agency review meeting held to discuss tiered approach for this project.
January 5, 2000	Notice of Intent to undertake Tier 1 NEPA study for I-69 between Evansville and Indianapolis is published in Federal Register.
February 3, 2000	INDOT and FHWA hosted a "Scoping Meeting" with environmental review agencies.
June 5, 2001	INDOT and FHWA convened an agency review meeting to discuss the "Purpose and Need Statement." A substantial portion of this meeting was devoted to discussing the type of agency coordination required in Tier 1 and Tier 2 of this study. The specific requirements of each agency were discussed in terms of its legal and regulatory responsibilities.
November 27, 2001	INDOT and FHWA convened an agency review meeting to discuss their "Screening of Alternatives" for I-69 (included environmental information).
December 21, 2001	BFO sent comments on the Draft Level 2 Alternatives Analysis Report for the Evansville to Indianapolis I-69 study including endangered species and Critical Habitat technical information.
March 14, 2002	Federally-listed species were reviewed and appropriate tables constructed with species, their number and status and presented to the USFWS at the BFO.
June 4 and 5, 2002	A BFO biologist took a two-day bus tour of I-69 alternatives focused on environmentally-sensitive areas with INDOT, FHWA, United States Environmental Protection Agency (USEPA), and Indiana Department of Natural Resources (IDNR).
June 2002	Through informal consultation with the USFWS, INDOT agreed to shift the common alignment of Alternative 3A, B, and C to be beyond the range of bats that forage around and hibernate in a cave that is Designated Critical Habitat for the Indiana bat in Greene County.
June 27, 2002	FHWA sent a letter to BFO requesting a list of federally-listed species and Designated Critical Habitat that may be present in the I-69 Study Area of five alternatives being carried forward for detailed analysis in the DEIS.
July 1, 2002	BFO sent FHWA a species list for all five alternatives that included six species and one cave Designated Critical Habitat for the Indiana bat that may be present within the proposed project counties.
July 31, 2002	INDOT and FHWA released their Tier 1 DEIS for public comment. The DEIS had been approved on July 22.
November 14, 2002	The BFO's comments on the Tier 1 DEIS are combined with those of the National Park Service and sent in a single letter from the Department of the Interior's Washington Office to FHWA.
January 9, 2003	Gov. Frank O'Bannon announced Alternative 3C as INDOT's recommendation as the "preferred alternative" for I-69.
February 21, 2003	FHWA requests a species list for their preferred alternative, 3C.
February 28, 2003	FHWA sends BFO a letter requesting comments regarding the four variations of Alternative 3C around the City of Washington.
March 11, 2003	An Agency Coordination Meeting was held at BFO to discuss a Conceptual Tier 1 Forest and Wetland Mitigation Plan, Sections of Independent Utility, the proposed Patoka River crossing, and how the Section 7 consultation would be undertaken.
March 13, 2003	BFO sent FHWA a letter listing three species that may be present in the Alternative 3C Study Area: Indiana bat, bald eagle, and fanshell mussel.
March 14, 2003	BFO sent FHWA a letter recommending that it choose one of the two eastern routes around Washington (variation "WE1" was specifically recommended) as they were less likely to have adverse effects to Indiana bats or bald eagles because impacts to forest and wetlands would be smaller.

Table 5.17-1: Summary of NEPA and Section 7 Consultation History for I-69, Tier 1 & Tier 2

Date	Event / Action
March 26, 2003	BFO was sent a Draft BA addressing effects to Alternative 3C on Indiana bats, bald eagles, and fanshell mussels and requested review and comments.
May 30, 2003	BFO returned comments on Draft BA.
June 15 – July 2003	BFO assisted INDOT and FHWA in developing Conservation Measures to be included in the BA that would avoid and minimize incidental take of Indiana bats and bald eagles.
July 21, 2003	BFO received a revised BA and letter from FHWA requesting formal Section 7 consultation for the effects of Alternative 3C of I-69 on Indiana bats and bald eagles. The letter also requested concurrence that fanshell mussels were not likely to be adversely affected by Alternative 3C. The 135-day period for formal consultation began.
August 22, 2003	BFO sent FHWA a letter acknowledging receipt and completeness of formal consultation initiation package. Informed FHWA that the USFWS expected to provide them with a final BO no later than December 3, 2003. Based on information contained in the BA, the USFWS also provided the FHWA written concurrence with their determination that the fanshell mussel was "not likely to be adversely affected" by the proposed construction, operation, and maintenance of Alternative 3C of I-69.
August – November 2003	BFO consulted with FHWA/INDOT to gain clarification on various issues resulting in several revisions to the Tier 1 BA.
November 28, 2003	BFO sent FHWA/INDOT a draft BO for review.
December 2, 2003	FHWA/INDOT returned comments on the draft BO to BFO.
December 3, 2003	BFO sent FHWA/INDOT the Final BO for Alternative 3C of I-69.
December 2003	INDOT released the FEIS with Alternative 3C named as its preferred alternative.
March 2004	FHWA issued a Record of Decision approving the 3C corridor.
Summer 2004	Tier 2 mist net surveys revealed the presence of 13 maternity colonies and scattered occurrences of male Indiana bats throughout the 3C corridor.
Fall-Winter-Spring 2004 and 2005	Tier 2 surveys at caves within five miles of the 3C corridor revealed limited seasonal use by Indiana bats at a small number of caves without previous documented use by Indiana bats.
Summer 2005	Additional mist netting and radio tracking located additional Indiana bat roost trees within the 13 maternity colony areas.
July 1, 2005	FHWA and INDOT met with USFWS and agreed to reinitiate formal consultation on Tier 1 of I-69 in light of all the new information on Indiana bat maternity activity and hibernacula in the project area.
Fall 2005	BFO and project consultant staff held weekly meetings to guide development of the Tier 1 BA Addendum.
February 2006	FHWA, INDOT, and USFWS signed a Pre-consultation Agreement.
March 7, 2006	FHWA submitted a Tier 1 BA Addendum to the USFWS with a letter requesting to reinitiate formal consultation for the Indiana bat.
June & July 2006	BFO consulted with FHWA/INDOT/project consultants to gain clarification on various issues discussed within the BA Addendum.
July 10, 2006	BFO reviewed and submitted comments on the Tier 1 Re-evaluation Report for I-69, which outlined anticipated impacts resulting from the interstate being a toll road.
July 17, 2006	BFO met with FHWA/INDOT/project consultants to discuss findings of the Tier 1 Re-evaluation report and other issues. It was agreed to expand the Winter Action Area to include an additional cave, which would necessitate FHWA/INDOT/project consultants to provide additional data to BFO and an effects determination on the cave as Critical Habitat. It was mutually agreed to extend the formal consultation period to accommodate these changes.

Table 5.17-1: Summary of NEPA and Section 7 Consultation History for I-69, Tier 1 & Tier 2

Date	Event / Action
July 20, 2006	BFO received a letter from FHWA stating that it determined that I-69 "may effect, but is not likely to adversely affect" the cave as Critical Habitat for the Indiana bat. Additional information was provided regarding impacts around this cave and revised data for the revised Winter Action Area.
July 26, 2006	USFWS provided FHWA a Draft of the revised Tier 1 BO and Incidental Take Statement for review.
August 10, 2006	FHWA/INDOT return comments on the draft revised Tier 1 BO to BFO.
August 24, 2006	BFO sent FHWA/INDOT the final Revised Tier 1 BO for Alternative 3C of I-69.
May 18, 2007	BFO sent FHWA a letter noting intention to prepare an individual Tier 2 BO for each Tier 2 section BFO concludes will be likely to adversely affect the Indiana bat and/or bald eagle. Each will be a stand-alone document rather than being appended to the 2006 revised Tier 1 BO.
April 11, 2011	FHWA sent BFO a letter requesting re-initiation of formal Tier 1 consultation for the Indiana bat. The re-initiation request was based on new maternity colony information, as well as documentation of the newly discovered disease White Nose Syndrome (WNS) within the action area.
April 12, 2011	BFO sent FHWA a letter acknowledging receipt of April 11, 2011 letter and stating it plans to amend the Tier 1 Revised Programmatic BO (dated August 24, 2006).
May 18, 2011	Draft Amendment to the Tier 1 Revised Programmatic BO (dated August 24, 2006) sent to FHWA/INDOT for review.
May 23, 2011	FHWA/INDOT returned comments on the Draft Amendment to the Tier 1 Revised Programmatic BO (dated August 24, 2006) to BFO.
May 25, 2011	BFO sent FHWA/INDOT the final Amendment to the Tier 1 Revised Programmatic BO (dated August 24, 2006).
Summer 2012	Mist netting completed for Section 5.
December 19, 2012	Section 5 Tier 2 BA was submitted to the USFWS.
May 20, 2013	FHWA sent BFO letter requesting re-initiation of formal Tier 1 consultation for the Indiana bat. The re-initiation request was based on the identification of two new maternity colonies in Section 5, exempted levels of take, and documentation for private property owner tree clearing in Section 4.
July 11, 2013	BFO sent Draft Amendment 2 to the Tier 1 Revised Programmatic BO (dated August 24, 2006) to FHWA/INDOT for review.
July 16, 2013	FHWA/INDOT returned comments on the Draft Amendment 2 to the Tier 1 Revised Programmatic BO (dated August 24, 2006) to BFO.
July 16, 2013	BFO sent Draft Tier 2 Section 5 BO to FHWA/INDOT for review.
July 19, 2013	FHWA/INDOT returned comments on the Tier 2 Section 5 BO to BFO.
July 24, 2013	BFO sent FHWA/INDOT the final Amendment 2 to the Tier 1 Revised Programmatic BO (dated August 24, 2006).
July 25, 2013	BFO sent FHWA/INDOT the final Section 5 Tier 2 BO.

Note: BFO = Bloomington Field Office, USFWS

Re-initiation of Formal Tier 1 Consultation – Tier 1 Revised Programmatic Biological Opinion (August 24, 2006)

USFWS recommended re-initiating formal consultation for only the Indiana bat during a meeting with FHWA and INDOT, held on July 1, 2005, to discuss the I-69 Tier 2 studies and Section 7 consultation. This would involve reexamining the I-69 corridor from Evansville to Indianapolis and possible impacts to the Indiana bat. The request for re-initiation was based on new field information collected in 2004 and 2005 concerning the Indiana bat. Re-initiation of formal consultation for Tier 1 resulted in the preparation of a BA Addendum for Tier 1 and issuance of a revised Tier 1 BO on August 24, 2006.

The BA Addendum was provided to USFWS on March 7, 2006. The BA Addendum detailed information gathered on the Indiana bat during Tier 2 studies and after the original BO was issued. Such studies consisted of mist netting, radiotelemetry studies, emergence counts of roost trees, autumn and spring habitat surveys, and cave surveys.

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. The revised BO replaces the original December 3, 2003, BO.

In Tier 1, a Summer Action Area (SAA)[4] for the Indiana bat was identified. This SAA is 2.5 miles to either side of the centerline of the corridor approved in Tier 1. This distance corresponds to the average range around maternity colonies in which female adult bats will forage during the summer breeding season. During consultation with USFWS, 13 Indiana bat maternity colonies with roosting/foraging areas were identified within the I-69 SAA.[5] These colonies had not been identified and were not included in the original Tier 1 BA. According to the revised Tier 1 BO, one (1) of these colonies is present near the Section 5 corridor. According to the revised Tier 1 BO, "despite the direct and indirect impacts from I-69 and other cumulative impacts, the USFWS believes that all 13 of the maternity colonies should still be able to persist in their current maternity areas, especially if proposed mitigation efforts are successful. USFWS recognized only a high level of concern for four (4) out of the 13 colonies in regards to their long-term (50+ years) conservation/sustainability" (see the Revised Tier 1 BO, p. 87). The Indiana bat maternity colonies associated with Section 5 are not among the four (4) colonies which the USFWS had a high level of concern regarding long-term sustainability. The Section 5 maternity colony is discussed in **Section 5.17.3.2**, *Federally-Listed Species*.

[4] An "action area" is defined by regulation as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area is not limited to the footprint of the action nor is it limited by the federal agency's authority. Rather, it is a biological determination of the reach of the proposed action on listed species. In Section 5, FHWA, INDOT, and the USFWS-BFO jointly developed two seasonally based action areas for the Indiana bat—a Summer Action Area (SAA) and a Winter Action Area (WAA)—and one for the bald eagle (Bald Eagle Action Area).

[5] During pre-construction mist netting for a portion of Section 4 in 2010, an additional Indiana bat maternity colony was identified. During the summer of 2012, two additional maternity colonies were identified in Section 5. One was identified during mist netting activities for Section 5 and the second was identified during mist netting activities in a private nature preserve. This brings the total number of maternity colonies to 16.

In addition to the SAA, a Winter Action Area (WAA) for the Indiana bat was identified in Tier 1. The WAA is the total area that falls within a five-mile radius circle centered around the known hibernacula within five miles of the proposed project corridor. The USFWS wished to include an additional hibernaculum within the analysis for the Tier 2 studies; therefore, the WAA has been expanded to include the 5-mile circle surrounding this additional cave. There are a total of 15 hibernacula within the WAA.

In summary, as stated in the revised Tier 1 BO, the following effects are anticipated for the Winter Action Area (WAA):

The Proposed Action will only directly or indirectly take or otherwise reduce the fitness of a relatively small number of bats (estimated total = 857 bats over a 17-year long period or about 50 bats/year) within the WAA and will only have minimal, short-term effects on these bats' respective maternity colonies and hibernating populations. The estimated amount of take only represents 1.2% of the *annual* winter population within the WAA. Similarly, loss of these individuals will have no adverse effect on the viability of other maternity colonies in the region or the species' range or to hibernating populations to which these individuals belong. So again, the Proposed Action in combination with relatively small amounts of cumulative impacts/take is not reasonably expected, directly or indirectly, to cause an appreciable reduction in the reproduction, numbers or distribution of the Indiana bat as a species (see the revised Tier 1 BO, p. 99)

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 mussel" and "is still likely to adversely affect but not jeopardize 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."

Re-initiation of Formal Tier 1 Consultation – Amendment to the Tier 1 Revised Programmatic Biological Opinion (May 25, 2011)

On April 11, 2011, the FHWA again reinitiated Tier 1 consultation based on new maternity colony information, as well as documentation of the newly discovered disease white-nose syndrome (WNS) within the action area. On May 25, 2011, the USFWS issued an Amendment to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement.

During hibernacula surveys in the winter of 2010-2011, the disease WNS was found within several Indiana caves, including some of those that serve as Indiana bat hibernacula. WNS was found on other species of hibernating bats but not Indiana bats. This was the first time the disease has been documented in Indiana. According to the USFWS, as of May 25, 2011 no Indiana bats in Indiana have been confirmed with WNS. In addition, during pre-construction mist netting in August 2010 (as required by a Conservation Measure in the revised Tier 1 BO) a fourth Indiana bat maternity colony was identified in Section 4. The new colony was named the Little Clifty

Branch colony and brought the total number of maternity colonies affected by the project to 14.[6] Finally, some minor impacts to the forest within five miles of a cave which has been designated as Critical Habitat for the Indiana bat under the ESA, were identified in Section 4. The location of the habitat impacts had changed from the analysis completed for the revised Tier 1 BO. Specific impacts within five miles of the cave designated as Critical Habitat were not identified because the County Line interchange north connector road was used in the original analysis. The north connector road is over five (5) miles from this cave. The south connector road for the interchange was chosen as the preferred connection and it resulted in minor forest impacts within five miles of the cave. In light of the new information discussed above and in consultation with USFWS, FHWA and INDOT chose to re-initiate formal Section 7 consultation for the Indiana bat.

The Amendment to the revised Tier 1 BO addresses only those sections of the revised Tier 1 BO that required new analysis for effects to the Indiana bat; otherwise the revised Tier 1 BO remains in effect.

The overall conclusions in the Amendment to the revised Tier 1 BO do not differ from those found in the revised Tier 1 BO. According to the Amendment to the revised Tier 1 BO (p. 18):

> After reviewing the current status of the Indiana bat, updated information regarding WNS and the environmental baseline for the action area, and new information regarding the preferred alignment of the road connecting the County Line Interchange to SR 45/54/445 in Greene County, the USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify its designated critical habitat.

Re-initiation of Formal Tier 1 Consultation – Amendment 2 to the Tier 1 Revised Programmatic Biological Opinion (July 24, 2013)

On May 20, 2013, the FHWA again reinitiated Tier 1 consultation for the Indiana bat based on new maternity colony information, exempted levels of forest and wetland take, and documentation on private property tree clearing in Section 4. On July 24, 2013, the USFWS issued Amendment 2 to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement.

Indiana bat presence surveys in 2012 captured a pregnant female Indiana bat in Section 5. Radio-telemetry showed this bat roosting in two snags. Roost tree emergence counts showed these snags to be primary roosts. As recommended by USFWS, FHWA and INDOT established the Lambs Creek Maternity Colony at this location which is west of Martinsville. In addition to the bat surveys that were completed for I-69, USFWS conducted a bat survey for the Sycamore Land Trust at the Beanblossom Bottoms Nature Preserve. Three Indiana bats were captured and

[6] Since completion of the May 25, 2011 Amendment to the August 24, 2006 revised Tier 1 BO, two additional Indiana bat maternity colonies have been identified in Section 5 binging the project-wide total to 16 colonies.

tracked to three different roosts. As recommended by USFWS, FHWA and INDOT included the Beanblossom Bottoms Nature Preserve Maternity Colony in the Section 5 Tier 2 BA. The addition of these two new maternity colonies in Section 5 brings the entire I-69 total to 16 Indiana bat maternity colonies along the project.

In addition to the two newly identified Indiana bat maternity colonies, INDOT and FHWA are requesting increases in the exempted level of take for habitat impacts. Exempted levels of take for forest and wetlands were developed in Tier 1 based on right-of-way impact estimates at that time. These exempted levels of take were included in the revised Tier 1 BO and the Amendment to the revised Tier 1 BO. Based on more up-to-date information on project impacts, some of these exempted levels of take are being approached or exceeded. This is primarily due to estimated impacts due to relocations of utilities and billboards which were not included in the original revised Tier 1 BO thresholds. The levels of take requested provide a more refined estimate that takes into account the additional utility and billboard impacts. FHWA is requested the increases in exempted level of take for the following habitat impacts: Tier 1 (project-wide) non-forested wetland impacts, Section 5 total forest impacts, and individual hibernacula Winter Action Area (WAA) circles (5-mile radius) forest impacts.

Finally, prior to INDOT's land acquisition activities for the Section 4 project, some private landowners chose to harvest trees on their land. This harvest activity occurred both within the area to be acquired by INDOT as part of the right-of-way for the project and some activity occurred outside of the planned right-of-way. Neither FHWA nor INDOT approved, consented to or condoned harvesting activities on the private land involved. Documentation of this activity and estimates of private property tree harvesting are also included in the Tier 1 Reinitiation letter.

The overall conclusions in the Amendment 2 to the revised Tier 1 BO do not differ from those found in the revised Tier 1 BO. According to the Amendment 2 to the revised Tier 1 BO (p. 25):

> After reviewing the current status of the Indiana bat, updated information regarding the environmental baseline for the action area, and new information regarding the two new colonies, additional forest and wetland impacts, and impacts from private landowner tree-clearing activities along the preferred alignment in Section 4, the USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, the FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify designated critical habitat.

Tier 2 Consultation

Because FHWA and INDOT are following a tiered approach for this project, USFWS has determined that a "tiered" consultation approach is appropriate. Under this approach, USFWS has completed a comprehensive and conservative "first tier" effects analysis in Tier 1. In conducting "second tier" section-specific consultations in Tier 2, USFWS ensures that actions "proposed under I-69's programmatic-level design standards (1) are consistent with the

previously evaluated standards and conservation commitments, (2) that there is nothing unusual about the proposed section-specific project that will result in unanticipated impacts, and (3) that the environmental baseline will be appropriately updated" (see **Appendix C**, *Agency Coordination Correspondence*, letter dated May 18, 2007). USFWS used "reasonable worst case" assumptions when developing its Tier 1-level BO. This evaluation will be refined through Tier 2 section-level consultation.

This approach will ensure that FHWA can fulfill its responsibilities under Section 7(a)(2) of the ESA to insure that actions implemented under the I-69 "program" are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated Critical Habitat.

The programmatic approach for I-69 was originally followed in this study. However, further consultation with the USFWS has identified that the USFWS is no longer planning to follow an "appended" programmatic approach as presented on page 37 of the August 24, 2006 Revised Programmatic BO for the second tier of the two-tiered consultation process for the I-69 project. Instead, the USFWS intends to prepare an individual Tier 2 BO for each of the six Tier 2 Sections for which the USFWS concludes will be likely to adversely affect the Indiana bat (*Myotis sodalis*) and/or bald eagle (*Haliaeetus leucocephalus*) (see **Appendix C**, *Agency Coordination Correspondence*, letter dated May 18, 2007). The Tier 2 BO for each of the six sections will be a stand-alone document that "tiers" back to the 2006 Revised Programmatic BO, rather than physically being appended to the Revised Programmatic BO.

Field studies in Section 5 included mist netting with radiotelemetry and Anabat, and bridge habitat surveys. Caves that provide winter habitat for the Indiana bat are referred to as hibernacula. The WAA established for the Indiana bat includes land within a five mile radius around known hibernacula within five miles of the 3C corridor. Caves within the WAA associated with Section 5 were harp trapped and surveyed to determine the presence of Indiana bats. Tier 2 studies related to the Indiana bat in Section 5 began in May 2004 and continued through Winter 2005-2006. Mist netting with radiotelemetry and Anabat was also conducted for Section 5 in the summer of 2012.

In addition, FHWA and INDOT agreed to commitments and mitigation documented in the revised Tier 1 BO. Proposed mitigation for the Indiana bat includes providing additional forested and wetland habitat for this species. Commitments related to Indiana bat winter habitat include the potential purchase and preservation of hibernacula.

5.17.2 Methodology

5.17.2.1 Endangered Species Surveys

Species specific surveys in Section 5 were conducted along with more generalized pedestrian surveys to determine the presence/absence of federal- and state-endangered and threatened species within the proposed I-69 project corridor. The survey methodologies are summarized below. The results of the surveys are described in **Section 5.17.3**, *Analysis*.

Indiana Bat Mist Netting

Through early coordination with USFWS, the federally-endangered Indiana bat (see **Figure 5.17-1** and **Figure 5.17-10**) was identified as potentially present in the Section 5 Study Area. Figures are located at the end of the chapter. In the summers of 2004 and 2005, mist netting was conducted at selected sites within the SAA. This survey was conducted to document captures of all bat species, including the federally-endangered Indiana bat and the state-endangered evening bat. A detailed description of the survey methodologies and results for the Indiana bat can be found in *Investigating the Presence of the Indiana Bat During the Summer Maternity Season within the Mitchell Plain Between Bloomington and Martinsville, Indiana (BHE 2004), Identification of Indiana Bat Roost Trees Along the Proposed Interstate 69 Between Bloomington and Indianapolis, Indiana (BHE, 2006),* provided in **Appendix O**, *Indiana Bat Surveys*.

The amount of time an Indiana bat presence/probable absence survey is considered valid varies, typically between three and five years. As such, the USFWS requested that Section 5 be resurveyed prior to the finalization of the FEIS. Therefore, additional mist netting for Section 5 was conducted in the summer of 2012. As in 2004, the primary objective of this study was to mist net and radio-track Indiana bats. Another objective was to note other bats, especially the presence of the state-endangered evening bat. A detailed description of the methodology for the 2012 survey can be found in *I-69 Mist Netting Survey for the Indiana Bat (Myotis sodalis) 2012 – Section 5 Bloomington to Martinsville (ESI, 2012),* provided in **Appendix O,** *Indiana Bat Surveys*. The methodology is summarized below.

According to the standard mist netting techniques as identified by the USFWS Mist Netting Guidelines (USFWS, 1999), two net sites netted for two nights are required for each square kilometer of Indiana bat habitat. Through consultation with USFWS, it was determined that 24 net sites would provide adequate coverage for Section 5. Parameters used for selecting exact net locations included access, canopy closure, travel corridors, size and quality of the adjacent habitat, and the presence of water. In addition to the mist netting activities, attempts were made to locate Indiana bat roost trees using radio-tracking technologies. A total of 13 bridges were surveyed for the presence of bats and bat guano. **Section 5.17.3,** *Analysis*, presents the results of the mist netting surveys.

Indiana Bat Harp Trapping and Cave Surveys

In addition to mist netting, harp trapping was conducted at 75 caves which were determined (through coordination with USFWS) to be potential Indiana bat habitat. These surveys were used to determine whether Indiana bats were present and to assess these caves as Indiana bat habitat. Traps were set to maximize coverage of flight paths used by bats at cave entrances. Typically, traps were placed at entrances, adjusted for height, and situated across (parallel to) the entrance. Areas of the entrance not covered by the trap were covered with netting to direct bats into the trap. Additional entrances were either trapped or excluded by netting. The caves were entered in winter 2005-2006 to search for hibernating Indiana bats. A detailed description of the survey methodologies and results for the Indiana bat can be found in *Surveys for Indiana Bats in Caves in Greene and Monroe Counties, Indiana* (BHE, 2005), *Autumn, Winter, and Spring Habitat for the Indiana Bat (Myotis sodalis) Within the Crawford Upland and Mitchell Plain From Scotland*

to Bloomington, Indiana (ESI, 2005), *Autumn 2005 and Winter 2006 Habitat for the Indiana Bat (Myotis sodalis) within the Crawford Upland and Mitchell Plain from Scotland to Bloomington* (ESI, 2006) and *Surveys for Indiana bats in Caves in Greene and Monroe Counties, Indiana* (BHE, 2006) provided in **Appendix O**, *Indiana Bat Surveys*.

Cave Biological Survey

Three caves within, or in close proximity to, the Section 5 corridor were surveyed to determine the presence of cave biology in 2005. Selection of the survey sites was based upon the results of karst studies within the Section 5 Study Area, which identified hydrologic connections between these sites and the Section 5 corridor or alternatives. The caves surveyed were selected based on the likelihood of impact from the proposed project. The cave biological surveys were directed at invertebrate species (including state-listed species); however, observed vertebrate species were also noted. A detailed description of the survey methodologies and results of this study can be found in *Interstate 69 Evansville to Indianapolis, Tier 2 Studies: Section 5 Final Karst Feature and Groundwater Flow Investigation Report* (Ozark Underground Laboratory, 2013), provided as **Appendix Y**, *Final Karst Report (Redacted).*

Generalized Pedestrian Surveys

Generalized pedestrian surveys were conducted to determine the presence/absence of listed species potentially located within the Section 5 corridor. A pedestrian survey consists of walking a study area and documenting floral and faunal species observed. Pedestrian surveys were conducted in September of 2004, and June of 2005.

Many of the floral species in the Section 5 corridor were identified during wetland, stream, and forest analysis. However, many floral species are inconspicuous during certain times of the year and are only readily visible while in bloom or when fruit has matured. Additionally, certain species of wildlife are conspicuous and readily observed, but the majority of species are inconspicuous and elusive. The mobile nature of many mammal and bird species can limit the effectiveness of field surveys. Although surveys for these species can include actual sightings, more pertinent data is developed from identifying and characterizing habitat types that fall within the proposed project.

The potential of occurrence of listed species is based on the habitat needs of the species, its documented occurrence within the county of the project area, and the habitats encountered during the pedestrian surveys. The potential for occurrence is documented as “none” (habitat not present within project area), “low” (semi-suitable habitat present, but other factors such as disturbance, development pressures or other issues decrease the chances of locating and documenting this species), “moderate” (suitable habitat, but species has not been documented within project area), or “present” (species has been documented within the project area).

Bird species were observed during wetland, stream and forest field surveys to record the presence of any migratory bird species protected by the Migratory Bird Treaty Act (MBTA). The specific migratory bird species protected by the MBTA can be found in 50 CFR §10.13. **Section 5.17.3**, *Analysis*, identifies the listed bird species observed in the Section 5 corridor.

Fish, Mussel, and Crayfish Surveys

Fish, mussel, and crayfish surveys were conducted for streams in Section 5 in 2004 and 2005. Eight streams were identified within the project corridor based on aerial photography and topographic maps. These streams were investigated for fish, unionids, crayfish, and habitat: Griffey Creek, Beanblossom Creek, North tributary to Beanblossom Creek, Unnamed tributary to Bryant Creek, Bryant Creek, Little Indian Creek, Jordan Creek, and Indian Creek. Preliminary investigation determined that Jordan Creek would not receive sampling for fish, crayfish, or unionids. Jordan Creek appears to be an intermittent stream and was dry at the time of review therefore only habitat was evaluated at this site. A Qualitative Habitat Evaluation Index (QHEI) form was completed for all streams. Survey methodology for each survey type is described in further detail below.

Fish Survey

Four of the six streams (Griffey Creek, Beanblossom Creek, Little Indian Creek, and Indian Creek) were sampled for fish using a DC-pulse tote barge electrofishing unit (refer to **Appendix HH**, *Fish, Unionid, and Crayfish Report*). Since the purpose of the survey was to characterize the fish community in terms of species composition and presence/absence of target species within the project corridor, 200 m sections within the corridor were delineated in each stream. The sampling area for each stream was defined as that length of stream extending 100 m downstream of the center of the SR 37 bridge to a point approximately 100 m upstream of that bridge. Access to Little Indian Creek at both SR 37 and Old SR 37 bridge crossings was not possible; therefore, the stream was accessed at the Godsey Road bridge. The stream was sampled for 200 m from Godsey Road upstream to within approximately 50 m of the SR 37 bridge crossing. This segment of Little Indian Creek was partially within the project corridor and similar in land use, stream characteristics, and habitat to Little Indian Creek in the project corridor upstream of SR 37 bridge. Since the segments were similar in characteristics and in close proximity to each other, the fish communities were presumed similar. Electrofishing began at the downstream point and continued to the upstream end. Effort expended at sites ranged from 9.6 to 21.9 electrofishing minutes. Stunned fish were collected and placed in a 19L bucket until processed. Those specimens too large for the bucket were processed immediately. Fish were identified, counted, measured for length (mm; total length for fish larger than 100 mm) and weight (g). Fish smaller than 100 mm were batch weighed. Those fish smaller than 100 mm and/or sole representatives of a species were not weighed due to equipment limitations. Fish not readily identified in the field were preserved with 10% formalin and returned to the laboratory for identification.

Three of the streams (North Tributary to Beanblossom Creek, Bryant Creek, and an unnamed tributary to Bryant Creek) were too small for sampling with a tote barge electrofishing unit, thus fish were sampled using a 3 mm (0.125 in) mesh seine and/or a Wisconsin battery-powered backpack electrofisher (refer to **Appendix HH**, *Fish, Unionid, and Crayfish Report*). Sites were demarcated as described above. Methods ranged from kick seining in shallow, rocky, and sandy areas; dragging the seine through deeper pools; and electrofishing the entire reach (200 m). Seined areas totaled approximately 50 m to 70 m of stream at each site. All habitats were representatively sampled. All collected fish were identified and counted as described above.

Metrics used to describe the fish community included abundance (total number of fish caught), species richness (number of species collected), catch-per-unit-effort (CPUE), evenness (diversity of species), and Shannon-Weiner diversity. The CPUE is the number of fish caught per unit of effort (meter or minute). Evenness represents the relative abundance of each species throughout the community in the study reach, and Shannon-Weiner diversity index measures the diversity of the study reach. Shannon-Weiner diversity index collectively evaluates abundance, richness, and evenness of a site.

Unionid (Mussel) Survey

Because species richness is a function of the number of individuals collected, qualitative methods (freely collecting all unionids encountered) were used to characterize the unionid community at each of the six sites (Strayer and Smith, 2003). The survey area was the same as that for fish and was defined as that length of stream extending 100m downstream of the center of SR 37 bridge to a point approximately 100 m upstream of that bridge. Unsuitable habitat areas (very shallow, thick vegetation, or thick silt over substrate) were not sampled. Unionids require burrowable substrate in water with sufficient flow to prevent sedimentation, but without enough flow to render the substrate unstable (Vaughn, 1997). Biologists visually and tactually searched for at least 1.5 work person hours (wph), concentrating their efforts in the highest quality habitats (clean substrates in flowing areas). All shells were collected and identified. Freshly-dead (lustrous nacre, periostracum intact, animal probably dead < 1 year), weathered dead (dull, chalky nacre, periostracum heavily eroded, animal likely dead >2-3 months), and live unionids were identified, counted, measured (length in mm), and aged (external annuli count). Habitat parameters including substrate, velocity, land use, and riparian vegetation were recorded.

Crayfish Survey

Crayfish were sampled using guidance outlined in the *Standard Operating Procedures for the Collection and Study of Burrowing Crayfish in Indiana* (Simon, 2004). Crayfish were originally to be collected while sampling for fish; however, fish were sampled in October 2004, which is when some crayfish are inactive (Simon, 2004; Thomas Simon, pers. comm., 2004). Therefore, crayfish sampling was postponed until June 2005 and conducted in the same reaches as fish sampling. A Wisconsin battery backpack electrofishing unit was used to collect crayfish. Stunned crayfish were netted or hand collected and placed into a 19L bucket until preserved. In areas where crayfish densities were high (>100 individuals), only a representative sample was retained. All crayfish were preserved with 70% ethanol and 10% formalin solution. Crayfish samples were sent to Dr. Thomas Simon of the USFWS Bloomington Field Office for identification.

5.17.3 Analysis

As previously noted, both species-specific and pedestrian surveys were conducted along the Section 5 corridor. A summary of the results for each survey type can be found below, followed by an evaluation of the likelihood of the occurrence of federal- and state-listed species in the Section 5 project area and potential impacts to the species as a result of the project.

5.17.3.1 Survey Results

Generalized Pedestrian Survey Results

No federally- or state-endangered flora or fauna was observed in the Section 5 corridor during generalized pedestrian surveys, which include the wetland, stream, and forest field surveys.

Bird species observed during generalized pedestrian surveys were recorded to document the presence of any migratory bird species protected by the MBTA. The specific migratory bird species protected by the MBTA can be found in 50 CFR 10.13. Listed bird species observed in the Section 5 corridor are identified in the following paragraphs.

Indiana Bat Mist Netting Results

In 2004, mist-netting surveys (see **Appendix** O*, Indiana Bat Surveys*) were conducted at 24 sites in Section 5. A total of 185 bats were captured, representing eight species, including Indiana bat, evening bat (*Nycticeius humeralis*), big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), hoary bat (*Lasiurus cinereus*), northern bat (*Myotis septentrionalis*) and eastern tricolored or pipistrelle (*Perimyotis subflavus*), all of which are state-listed except the big brown bat. **Section 5.17.3.3** discusses state-listed species, including the big brown bat. The Indiana bat is also federally-endangered. **Section 5.17.3.2** discusses federally-listed species. A total of five Indiana bats were captured. All five captured Indiana bats were fitted with radio-transmitters and tracked after release. Two roost trees were located. None of these roosts were located within the project corridor.

Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. Three mist net sites were surveyed for a total of 12 net nights. One lactating female Indiana bat was captured. The lactating female was radiotagged and successfully tracked to four new roost trees. None of these roosts were located within the project corridor. Other species captured in 2005 included the big brown bat, eastern red bat, northern bat, eastern pipistrelle, and little brown bat.

Additional mist netting surveys were completed during the summer of 2012. This effort yielded a total of 334 bats representing nine species including, Indiana bat, eastern red bat, big brown bat, eastern pipistrelle, northern bat, little brown bat, hoary bat, silver-haired bat (*Lasionycteris noctivagans*), and evening bat. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were tracked to a total of three roost trees. A third adult male was tracked to a bat box near a residence. Two pregnant females were successfully tracked to a total of three roosts. None of these roosts were located within the project corridor.

Bridge Inspections for the Presence of Roosting Bats

No Indiana bats were observed roosting at any of the thirteen (13) inspected bridge locations. No Indiana bat guano was observed to be present at any of the inspected locations.

Indiana Bat Harp Trapping and Cave Survey Results

Four rounds of harp trapping and cave surveys were conducted and documented in separate reports. Results of these four rounds of trapping/survey are described below.

Thirty caves were harp trapped during the autumn of 2004 for the federally-endangered Indiana bat. A total of 1,081 bats representing five species were captured. These include 424 northern bats, 417 little brown bats, 232 eastern pipistrelles, six Indiana bats, and two big brown bats. Indiana bats were captured at three caves. Surveyed caves were entered in winter 2005 to search for hibernating Indiana bats. A total of 627 bats representing five species was found. These include 382 little brown bats, 206 eastern pipistrelles, 29 Indiana bats, six big brown bats, and four northern bats. Indiana bats were found in two caves, one of which harbored 78% of the winter census. Two caves that were not entered in winter were again harp trapped during the spring of 2005 for the Indiana bat. A total of 296 bats representing three species were captured. These include 189 northern bats, 88 little brown bats, and 19 eastern pipistrelles. No Indiana bats were captured at these caves in the spring. A description of these survey results for the Indiana bat can be found in *Autumn, Winter, and Spring Habitat of the Indiana Bat (Myotis sodalis) Within the Crawford Upland and Mitchell Plain from Scotland to Bloomington, Indiana* (ESI, 2005).

Thirty caves were harp trapped (autumn 2004) and surveyed (winter 2004 and 2005). A total of 719 bats representing four species were captured. These consisted of 129 northern bats, 296 little brown bats, 282 eastern pipistrelles, and 11 Indiana bats. Thirty caves were surveyed during the winter of 2004 to search for hibernating bats. A total of 2,030 bats representing four species were found. These consisted of 1,160 eastern pipistrelles, 844 little brown bats, 10 northern myotis, nine big brown bat and four unknown *Myotis*. In the spring of 2005, six caves were trapped. A total of 27 bats representing four species were captured. These were four northern bats, four little brown bats, 17 eastern pipistrelles and two big brown bats. Five caves were surveyed during the spring of 2005. The survey indicated that these caves were not used by hibernating bats for most of the previous winter. A description of these survey results for the Indiana bat can be found in *Surveys for Indiana Bats in Caves in Greene and Monroe Counties, Indiana* (BHE, 2005).

In addition, seven caves were trapped (autumn 2005) and surveyed (winter 2006). A total of 384 bats representing four species were captured. These included 217 northern bats, 118 little brown bats, 47 eastern pipistrelles, and two Indiana bats. The Indiana bats were captured at a cave in Greene County. The same caves were entered in the winter of 2006 to search for hibernating Indiana bats. A total of 216 bats representing three species were found. These were 136 eastern pipistrelles, 79 little brown bats, and one Indiana bat. Like the autumn survey, the Indiana bat was found in the same Greene County cave. This cave harbored 35% and 32%, respectively, of the bats found during autumn and winter censuses. A description of these survey results for the Indiana bat can be found in *Autumn 2005 and Winter 2006 Habitat for the Indiana Bat (Myotis sodalis) within the Crawford Upland and Mitchell Plain from Scotland to Bloomington* (ESI, 2006), and **Appendix O**, *Indiana Bat Surveys.*

Eight caves were trapped (autumn 2005) and surveyed (December 2005). A total of 84 bats representing four species were captured. These consisted of 39 northern bats, 33 little brown

bats, 10 eastern pipistrelles, and two Indiana bats. The Indiana bats were captured at a cave in Monroe County. The same caves were entered in the winter of 2005-2006 to search for hibernating Indiana bats. A total of 248 bats representing four species were found. These were 159 eastern pipistrelles, 80 little brown bats, one northern myotis and eight big brown bats. A description of these survey results for the Indiana bat can be found in *Surveys for Indiana bats in Caves in Greene and Monroe Counties, Indiana* (BHE, 2006), and **Appendix O**, *Indiana Bat Surveys*.

Cave Biological Survey Results

Representatives of 12 taxa were identified during the biological survey of the three caves within, or in close proximity to, the Section 5 corridor. Species identified included, hidden spring snail (*Fontigens cryptica*), northern cave isopod (*Caecidotea stygia*), Indiana cave amphipod (*Crangonyx indianensis*), Packard's groundwater amphipod (*Crangonyx packardi*), Barr's cave amphipod (*Crangonyx barri*), cave crayfish (*Orconectes inermis testii*), Barr's cave crayfish ostracod (S*agittocythere barri*), subterranean sheet-web spider (*Phanetta subterranea*), Bollman's cave millipede (*Conotyla bollmani*), Indiana cave springtail (*Sinella alata*), Mayfield cave beetle (*Pseudanophthalmus shilohensis mayfieldensis*), and cave dung fly (*Spelobia tenebrarum*). A detailed description of the survey methodologies and results of this study can be found in *Interstate 69 Evansville to Indianapolis, Tier 2 Studies: Section 5 Final Karst Feature and Groundwater Flow Investigation Report* (Ozark Underground Laboratory, 2013), provided as part of **Appendix Y**, *Final Karst Report (Redacted).*

5.17.3.2 Federally-Listed Species

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Therefore, species are anticipated to have acclimated to the existing condition of the project area and a landscape change that would eliminate habitats usable by these species is not anticipated.

Federally-Listed Flora

Based on the Section 7 consultation initiated with USFWS as part of the Tier 1 FEIS, no federally-listed plant species were identified as species of consideration for this project. According to IDNR Division of Nature Preserves (DNP) Natural Heritage Data Center database, there are no recorded occurrences of federally-listed flora species known to occur within Morgan and Monroe counties. Furthermore, no federally-listed species of flora were observed during the Tier 2 field studies for Section 5. Therefore, no impacts to federally-listed flora are anticipated in Section 5.

Federally-Listed Fauna

Based on the Section 7 consultation initiated with USFWS as part of the Tier 1 FEIS, described in **Section 5.17.1**, the following federally-listed endangered or threatened species were identified by USFWS as being potentially located within the Section 5 project corridor. The Tier 1 Section 7 consultation also included the bald eagle, which has since been delisted but is still federally-

protected under the Bald and Golden Eagle Protection Act and is discussed under a separate section below.

The results of the Tier 1 Section 7 consultation are described following the description of each species below:

- **Indiana bat (*Myotis sodalis*), SE (State-Endangered), FE (Federal-Endangered):** During the summer months, Indiana bat habitat consists of wooded or semi-wooded areas, mainly along streams and riparian corridors. Solitary females or small maternity colonies bear their offspring in hollow trees or under loose bark of living or dead trees. Dead trees are preferred roost sites and trees standing in sunny openings are attractive since the air spaces and crevices under the bark provide warmth and cover. Typical roost tree species include red elm (*Ulmus rubra*), American elm (*Ulmus americana*), northern red oak (*Quercus rubra*), post oak (*Quercus stellata*), white oak (*Quercus alba*), shingle oak (*Quercus imbricaria*), shagbark hickory (*Carya ovata*), bitternut hickory (*Carya cordiformis*), red hickory (*Carya ovalis*), silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), Eastern cottonwood (*Populus deltoides)*, green ash (*Fraxinus pennsylvanica*), sassafras (*Sassafras albidum*), shell bark hickory (*Carya laciniosa*), white ash (*Fraxinus americana*) and black locust (*Robinia pseudoacacia*). Indiana bats (see **Figure 5.17-1** and **Figure 5.17-10**) have been known to use the same roost sites in successive summers, which suggest site fidelity. During the winter months, Indiana bats gather in large numbers in a few caves in Indiana and elsewhere (Mumford & Whitaker, 1982). Indiana bats were captured near the Section 5 corridor and the species is considered to be present within the project area.
- **Eastern fanshell mussel (*Cyprogenia stegaria*) SE, FE:** The eastern fanshell mussel (see **Figure 5.17-3**) inhabits medium to large rivers in gravel riffles. It has a rounded, solid, and moderately inflated shell, numerous pustules (typically concentrated in the center of the shell), elevated growth lines, and broken green rays. The eastern fanshell mussel has a length of up to three inches. Based on previous studies, no eastern fanshell mussels have been found nor are they expected to occur in the Section 5 corridor.

The formal and informal Section 7 consultation with USFWS during the Tier 1 EIS process narrowed the list of federal species for consideration during the Tier 2 process to the Indiana bat, the bald eagle and the eastern fanshell mussel. FHWA and INDOT prepared a Tier 1 BA for all three species identified by USFWS and an Addendum to the Tier 1 BA for the Indiana bat. Based on the original Tier 1 BA, USFWS issued a BO on December 3, 2003, in which it concluded that the construction, operation, and maintenance of I-69 is "not likely to adversely affect the eastern fanshell mussels"; and is "not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle."

On August 24, 2006, USFWS issued a revised Tier 1 BO. The revised BO concurred with the conclusions of the December 2003 Tier 1 BO regarding the mussel, bald eagle, and Indiana bat, and additionally concluded the project would not be "likely to destroy or adversely modify [Indiana bat] designated Critical Habitat." Regarding Critical Habitat for the bald eagle, the revised BO noted, "[B]ecause no Critical Habitat has been designated for the bald eagle, none will be adversely modified by this project." The revised BO also included an incidental take

statement for both species. The revised BO specifies the procedures to be followed for Section 7 consultation in Tier 2.

On May 25, 2011, as a result of reinitiating Tier 1 consultation for the Indiana bat due to new information on WNS, discovery of a new Indiana bat maternity colony in Section 4, and minor forest impacts within five miles of a cave designated as Critical Habitat, the USFWS issued an Amendment to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement. This Amendment to the revised Tier 1 BO stated, "the Service determined that the aggregate level of anticipated take is not likely to result in jeopardy to Indiana bats or destruction or adverse modification of designated Critical Habitat."

On July 24, 2013, as a result of reinitiating Tier 1 consultation for the Indiana bat based on new maternity colony information, exempted levels of forest and wetland take, and documentation on private property tree clearing in Section 4, the USFWS issued an Amendment 2 to the August 24, 2006 revised Tier 1 BO, including a revised Incidental Take Statement. This Amendment 2 to the revised Tier 1 BO stated, "the Service determined that the aggregate level of anticipated take is not likely to result in jeopardy to Indiana bats or destruction or adverse modification of designated Critical Habitat."

During the biological field surveys conducted for Section 5, no additional federally-listed species of flora or fauna were identified. The mist netting captured five Indiana bats in 2004. All five Indiana bats were fitted with transmitters in 2004 and two roosts were located using radio-transmitters and telemetry in 2004. None of these roosts were located within the Section 5 corridor. Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. One lactating female Indiana bat was captured. The lactating female was radiotagged and successfully tracked to four new roost trees. None of these roosts were located within the project corridor.

Additional mist netting surveys were completed during the summer of 2012. This yielded a total of 334 bats representing nine species including, Indiana bat, eastern red bat, big brown bat, eastern pipistrelle, northern bat, little brown bat, hoary bat, silver-haired bat, and evening bat were captured. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were tracked to a total of three roost trees. A third adult male was tracked to a bat box near a residence. Two pregnant females were successfully tracked to a total of three roosts. None of these roosts were located within the project corridor.

One Indiana bat maternity colony was identified in Section 5 during the original mist netting efforts in 2004-2005. A maternity colony consists of reproductively active female Indiana bats and their young. A maternity colony was determined to exist if there was evidence of reproduction in an area during the summer reproductive season (the capture of a reproductive female or juvenile, or high emergence counts at an identified roost tree). Each maternity colony foraging area consists of a circle with a 2.5-mile radius.

A total of 16 Indiana bat colonies were identified for all six sections of the I-69 project.[7] There are three colonies identified in the Section 5 Study Area. These colonies are discussed below.

- **Bryant Creek Maternity Colony** - This colony use area is in the vicinity of Bryant Creek. Two (2) secondary roost trees were identified within this colony. No known roost trees will be removed during construction of I-69. Approximately 42.2 acres of forest will be taken by I-69 in this colony use area. This constitutes approximately 0.9% of the 4,710 tree cover acres of this colony use area.
- **Lambs Creek Maternity Colony –** This colony use area is in the vicinity of Lambs Creek, west of SR 37. Two primary roost trees were identified within this colony. These roosts were not already within an existing maternity colony. No known roost trees will be removed during construction of I-69. Approximately 5.6 acres of forest will be taken by I-69 in this colony use area. This constitutes approximately 0.1% of the 5,058 tree cover acres of this colony use area.
- **Beanblossom Bottoms Nature Preserve Maternity Colony** - In addition to the bat surveys that were completed for I-69, the USFWS conducted a bat survey for the Sycamore Land Trust at the Beanblossom Bottoms Nature Preserve, west of SR 37. One primary roost and two secondary roosts were identified within this colony. No forests or roost trees will be impacted by the construction of I-69.

The potential impacts to forests for the Section 5 alternatives range from 229 acres (Refined Preferred Alternative 8) to 441 acres (Alternative 4), which are 12% and 23% of the total forest area in the corridor, respectively. Potential impacts to forests for the Refined Preferred Alternative 8 are the lowest of the six alternatives with 229 acres, which is 12% of the total forest acreage in the corridor. This is approximately 74 acres less than the 303 acres estimated in the revised Tier 1 BO.

As stated in the Amendment 2 to the revised Tier 1 BO, the USFWS states, “After reviewing the current status of the Indiana bat, updated information regarding the environmental baseline for the action area, and new information regarding the two new colonies, additional forest and wetland impacts, and impacts from private landowner tree-clearing activities along the preferred alignment in Section 4, the USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, the FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify designated critical habitat.” (p. 25)

The basis for this conclusion, as stated in the Amendment 2 to the revised Tier 1 BO, is listed below (p. 25-27):

- *Neither the additional forest impacts due to utility/billboard relocations (including those in the various individual hibernacula WAAs) nor the additional acres of wetland impacts are*

7 Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.

likely to adversely affect any of the known maternity colonies, hibernacula, male Indiana bats, or the local hibernating/swarming populations. The impacts will result in minimal, short-term loss of habitat with no direct take anticipated due to tree-clearing restrictions.

- *Private landowner timber harvests that took place primarily in 2011, within and adjacent to the I-69 project right-of-way, were primarily a concern for the Little Clifty Maternity Colony. Based on model predictions, we do not believe that this activity has resulted in a long-term reduction of fitness (reproductive potential or survival) for this maternity colony.*
- *Although the selective harvesting activities may have reduced the number of snags present in an area, based on the existing amount of forested habitat in Section 4 and the average number of snags present, numerous snags will still be available in the area. Furthermore, in most instances, the harvested areas were strung throughout the colony area, and not concentrated in the colony's core.*
- *FHWA and INDOT have developed additional landowner correspondence and an additional conservation measure to specifically address the issue of private landowner tree clearing in the Action Area.*
- *In general, areas with less than 5% forest cover are not capable of sustaining an Indiana bat maternity colony. Currently, forest coverage (i.e. tree cover) in the maternity colonies ranges from 10.5% to 70% (estimates for tree cover loss at the colony with 10.5% tree cover is only 1 acre total); see Table B2* [of the Amendment 2 of the revised Tier 1 BO] *for tree cover estimates per colony. The construction of I-69 (and associated utility/billboard relocations) will directly reduce the total amount of forest habitat/tree cover available around each of the 16 known colonies and in some cases will cause small additional amounts to be indirectly lost by induced development. When combined, the percentages of existing tree cover that will be directly and/or indirectly impacted at each maternity colony is very small. Twelve of the 16 colonies will lose less than 1% of their tree cover, and the other four will lose 1.4%, 1.7%, 2.1% and 2.6%; therefore, the total amount of forest loss is, we believe, insignificant for each colony. We do not anticipate any long-term reductions in maternity colony reproductive success or survival as a result of this loss.*
- *We do not believe that any of the 16 maternity colonies will be permanently displaced by the interstate; that is, sufficient quality and quantity of habitat will remain throughout the life of the project. In addition, the proposed 3:1 mitigation commitment for upland forest losses will largely be focused on improving forest habitats within these affected maternity colony areas, and thus, any adverse impacts from habitat loss will be temporary.*
- *We estimate the incidental take of Indiana bats* ***during the summer,*** *as a result of the proposed action, will be no more than 307 bats (261 females/juveniles and 46 males) spread over a 17-year long period. On an annual basis, this equates to about 18 bats being taken (largely as a result of harm or harassment, not mortality) per year, during the summer, throughout the entire project corridor. Table B4 in Appendix A* [of the Amendment 2 of the revised Tier 1 BO] *breaks down the anticipated take by colony and males. This total take equates to less than 1% of the Indiana bat population that occupies these areas each summer.*
- *We estimate the proposed action will only directly or indirectly take a relatively small number of bats* ***during fall, winter and spring*** *(estimated total = 761 bats over a 17-year*

long period or about 44 bats/year; see Table B5 [of the Amendment 2 of the revised Tier 1 BO]*) and will only have minimal, short-term effects on these bats' respective maternity colonies and hibernating populations. The estimated amount of yearly take represents only 0.05% of the annual winter population within the Action Area. Loss of these individuals will have no measurable effects on the viability of other maternity colonies in the region or the species' range or to hibernating populations to which these individuals belong. Again, the proposed action in combination with relatively small amounts of cumulative impacts/take is not reasonably expected, directly or indirectly, to cause an appreciable reduction in the reproduction, numbers or distribution of the Indiana bat at local, regional, range-wide scales.*

- *Mitigation and conservation efforts associated with the project will include over 2,200 acres of reforestation (with permanent protection) and the permanent conservation of an additional 4,000-plus forested acres, managed for the Indiana bat and other wildlife species. Reforestation and restoration efforts will more than offset the anticipated direct forest and wetland loss (including the acreage clear-cut by private landowners) and the additional acreage of forest preservation will ensure suitable bat habitat remains in the area in perpetuity.*
- *Permanent conservation easements have been placed on the fourth and sixth largest hibernacula in the state; protection of these Priority 1A hibernacula is very important for the long term protection and recovery of the species. Specifically, permanent protection at one hibernaculum will eliminate the estimated take due to vandalism and human disturbance. Furthermore, permanent protection of both caves and their surrounding forests provides long-lasting protection of essential fall swarming habitat for the 38,000 Indiana bats that use these caves and eliminates future possibilities for this property to be developed.*

Eastern Fanshell Mussel

Mussel surveys were conducted in Section 5, and no eastern fanshell mussels were identified. In addition, previous studies and coordination with IDNR have indicated or reported that no eastern fanshell mussels occur in the streams within the area.

The Bald and Golden Eagle Protection Act

- **Bald eagle (*Haliaeetus leucocephalus*) State Special Concern (species) (SSC), formerly FT (Federal-Threatened)[8]:** Bald eagles (see **Figure 5.17-2**) live near large bodies of open water such as lakes, marshes, seacoasts, and rivers where there are plenty of fish to eat and tall trees for nesting and roosting. Bald eagles use a specific territory for nesting, winter feeding, or a year-round residence. The bald eagle's natural range is from Alaska to Baja, California, and from Maine to Florida. Those that reside in the northern United States and Canada, migrate to the warmer southern climates of the United States during the winter to obtain easier access to food, especially fish. Some bald eagles that reside in the southern United States migrate slightly north during the hot summer months.

[8] Delisted under the ESA effective August 8, 2007. The bald eagle is still federally-protected under the Bald and Golden Eagle Protection Act.

Bald eagles feed primarily on fish, but also eat small animals (ducks, coots, muskrats, turtles, rabbits, snakes, etc.) and occasional carrion (dead animals).

They build large nests, called aeries, at the top of tall sturdy trees. The nests become larger as the eagles return to breed and add new nesting materials year after year. Bald eagles make their new nests an average of two feet deep and five feet across. Eventually, some nests reach sizes of more than 10 feet wide and can weigh several tons. When a nest is destroyed by natural causes, it is often rebuilt nearby. Nests are lined with twigs, soft mosses, grasses, and feathers.

One nest site was identified during surveys conducted in Spring 2012 within the riparian corridor of Beanblossom Creek, approximately 0.5 mile from existing SR 37 and approximately 0.3 mile from proposed local access road improvements. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines. No impacts to the nest site are anticipated by the proposed action. A conservation easement is being pursued on this parcel for I-69 Section 5 forest mitigation.

The Bald and Golden Eagle Protection Act (Act) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

5.17.3.3 State-Listed Species

The Indiana Natural Heritage Data Center database, managed by the IDNR Division of Nature Preserves, was reviewed to identify state-listed threatened, endangered, rare, or special concern species records within Monroe and Morgan counties. Coordination with IDNR (Division of Nature Preserves and Division of Fish and Wildlife) along with past and present field reviews indicates that habitat for some state-listed species may be present within one mile of either side of the Section 5 corridor. Field surveys identified some species to be present in the Section 5 corridor and results are summarized below.

The potential for occurrence of listed species is based on the habitat needs of the species, its documented occurrence within the county of the proposed project, and the habitats encountered during the pedestrian transect surveys. The scale for which potential for occurrence is documented is as follows: "none" (habitat not present within the project area), "low" (semi-suitable habitat present, but other factors such as disturbance, development pressures or other issues decrease the chances of locating and documenting this species), "moderate" (suitable habitat, but species has not been documented within the project area), and "present" (species has been documented by a qualified biologist within the project area).

The following briefly describes these species and preferred habitat, notes the potential for the species' occurrence in the project corridor, and assesses the potential for impacts to the species

as a result of the project. As will be noted, the potential for occurrence for the majority of species is considered low. Some impacts are possible due to impacts on suitable habitat. Forest and wetland mitigation for Section 5 is anticipated to benefit both state and federally-listed species.

State-Listed Flora

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Therefore, species are anticipated to have acclimated to the existing condition of the project area and a landscape change that would eliminate habitats usable by these species is not anticipated.

Black-fruit mountain-ricegrass (*Oryzopsis racemosa)* State Rare (SR): This species has been noted in Monroe County on the top of rocky, wooded, limestone cliffs along Clear Creek (Deam, 1929). Elsewhere in Indiana, it has been observed on dune slopes and wooded bluffs. This species has been noted to respond favorably to prescribed burns (Swink and Wilhelm, 1994).

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

Mercury (*Acalypha deamii*) SR: Mercury is an annual forb that blooms in early summer. This species is adapted to medium textured soils with pH between 5.9 and 7.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

Golden alexanders (*Zizia aptera*) SR: Golden alexanders is adapted to humus-rich soils and occurs in seasonally wet prairies and open woods.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

Butternut (*Juglans cinerea*) State Watch List (WL): The butternut tree ranges from Minnesota to South Carolina, Georgia, and Arkansas. In Indiana, it is a mesic forest tree that occurs in floodplain and stream terrace forests in rich, moist soil (Gleason and Cronquist, 1991). This species achieves its best growth in well-drained bottomland and floodplain soils (Homoya, 1992).

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

State-Listed Fauna

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Therefore, species are anticipated to have acclimated to the existing condition of the project area and a landscape change that would eliminate habitats usable by these species is not anticipated.

Invertebrates

Troglobitic crayfish (*Orconectes inermis testii)* SR: This cave obligate species inhabits subterranean pools and is known to be present in Monroe County and from over 70 localities in Southern Indiana and North-Central Kentucky (Lewis 2002a). This species occurs in the Wesley Chapel Gulf Special Area, Lick Creek, and the periphery of the Tincher Karst Special Area. It is typically found in cave streams either crawling around the substrate or hiding under rocks. Great depth is not required for this species; however, it is usually found in streams of depth adequate for the crayfish to remain submerged (Lewis 2002a). This species was found in Cave A[9] and Cave B[10] during the cave biology survey completed in 2005.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is not listed for Morgan County. This species was found in Cave A and Cave B during the cave biology survey completed in 2005

Potential impact: None anticipated. Neither of these caves would be directly impacted by highway construction. The alternatives are about seven tenths of a mile south of the Cave A location. However, all of the alternatives are underlain by the Cave A recharge area. A mapped arm of Cave A extends under the existing SR 37. The Section 5 alternatives will increase the existing SR 37 impacts to karst features with the addition of a third travel lane, wider shoulders and additional right-of-way by increasing the amount of impermeable land cover, blocking existing water entry routes, increasing the stormwater runoff rates, and the available mass of transportation related compounds. As the alternatives are on a similar alignment in this area, all alternatives will result in a similar impact upon the Cave A recharge area. In the development of the highway drainage system design, care will be taken to perpetuate recharge to this cave. Additionally, the water quality of highway runoff directed toward recharge features will be remediated through appropriate measures

[9] Cave A (see **Section 5.21**, *Karst Impacts*, **Figure 5.21-8**) is fully contained within the Section 5 Study Area and extends across the Section 5 Corridor (E/W).

[10] Cave B is located in the Section 4 Study Area, and over 800 feet south of the Section 5 corridor. The approximate recharge area and additional information about Cave B can be found in **Section 5.21**, *Karst Impacts*, and **Appendix Y**, *Final Section 5 Karst Report (Redacted).*

implemented pursuant to the 1993 Karst Memorandum of Understanding (MOU) between INDOT, IDEM, IDNR and the USFWS. Karst springs are present within these caves. As required by Steps 4, 7, 8, and 10 of the Karst MOU, highway runoff will be treated through implementation of Best Management Practices (BMPs) and measures developed for a specific feature (such as the Cave A recharge) prior to being directed toward a karst feature. Existing SR 37 was constructed through the Cave A and B recharge areas in the 1970's. The fauna identified in the 2005 biological survey (**Appendix Y**, *Final Karst Report [Redacted]*) have become conditioned to the residential and transportation land use after more than 40 years of influence. Therefore, the project is not expected to result in such changes of a sufficient magnitude to adversely affect the troglobitic crayfish or other identified state listed species.

Barr's commensal cave ostracod (*Sagittocythere barri*) WL: Ostracods are small crustaceans, typically around 1 mm in size, but varying between 0.2 mm to 30 mm, laterally compressed and protected by a bivalve-like, chitinous or calcareous valve or "shell."

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was observed in Cave B during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Jordan cave isopod (*Caecidotea jordani*) SE: Isopods are one of the most diverse orders of crustaceans, with many species living in all environments. Cave isopods include obligate subterranean species. Cave isopods include obligate subterranean species. The Jordan cave isopod is an unusually large, blind, albinistic, troglobitic isopod within the family Asellidae. Maximum body length is 23 mm in males and 15 mm in females.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in any of the three sites surveyed for cave biology in 2005.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Indiana cave springtail (*Sinella alata*) WL: This obligate subterranean species is endemic to Indiana, where it occurs in caves in Clark, Crawford, Harrison, Jennings, Lawrence, Monroe, Orange and Washington counties. The species has been recorded from six caves on the Hoosier National Forest. (Lewis, 1983, 1994, 1995, 1998; Lewis et al., 2002, 2004). This springtail is usually found in moist organic litter, stream detritus stranded on mudbanks, on raccoon or woodrat droppings, or similar nutrient rich microhabitats.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is not listed for Morgan County. This species was identified in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Mayfield cave beetle (*Pseudoanophthalmus shilohensis mayfieldensis*) SE: This cave dwelling ground beetle species is a member of the Other Beetles group in the Carabidae family. Its range is apparently limited to Indiana. It is known to inhabit cobble cave substrates with a very shallow stream flowing underneath.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was observed in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Hidden springsnail (*Fontigens cryptica*) SE: This species is a member of the freshwater snails group in the Hydrobiidae family.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is not listed for Morgan County. This species was identified in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish (*Orconectes inermis testii*).

Packard's groundwater amphipod (*Crangonyx packardi*) WL (**Figure 5.17-4**): Amphipods are peracarid crustaceans, typically ranging in size from 2 to 50 mm, although a few may be larger. Amphipods are common in aquatic ecosystems throughout many parts of the world, inhabiting marine, brackish, and freshwater environments. A few species also live in terrestrial ecosystems. This obligate subterranean amphipod occurs in a variety of groundwater habitats from southern Indiana south through Kentucky, west into Illinois, across Missouri and into the eastern third of Kansas. This species has been taken from a variety of aquatic habitats including ephemeral, as well as permanent, cave streams, stream pools, and drip pools. The species shows a preference for the interstices of cave stream gravels (Lewis 2002a).

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is not listed for Morgan County. This species was identified in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Bollman's cave millipede (*Conotyla bollmani*) WL: This troglobitic species is primarily an inhabitant of caves, with only a few known surface collections. It is a member of the Millipedes and Centipedes group in the Conotylidae family endemic to southern Indiana occurring in Orange, Martin, Lawrence, Monroe, and Owen counties. It seems to be ubiquitous in many caves of the East Fork of the White River drainage (Lewis 1998) where it is typically found in riparian cave habitats or other moist areas.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is not listed for Morgan County. This species was identified in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Hilly springtail (*Pseudosinella collina*) SR: The reported range for this species is from Alabama north to Pennsylvania. This springtail has been reported from eight sites in Indiana, six of which are caves. These caves occur in Martin, Monroe, Orange, and Washington counties (Lewis 1998). The Hoosier National Forest contains five of the sites where this species is known to occur in Indiana. This species is known to inhabit leaf litter in the twilight zone of sinkhole caves, where leaf litter falls or is washed into the cave in quantities. The sinkhole floors and twilight zone of these caves represent a specialized buffer zone that likely remains moister throughout the year as well as buffered against changes in surface temperatures (Lewis et al 2004). In general springtails feed on decaying plant material, fungi, bacteria or arthropod feces (Christiansen & Bellinger, 1998).

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in any of the three sites surveyed for cave biology in 2005.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Homoplectran caddisfly (*Homoplectra doringa*) SE: This species is a net-spinning caddisfly in the Hydropsychidae family.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Refer to discussion under Troglobitic crayfish.

Barr's cave amphipod (*Crangonyx barri*) SR: This species is a member of the Crangonyctidae family. It is morphologically adapted and restricted to caves and must feed and reproduce in the cave environment.

Potential for occurrence: Present. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County or Morgan County. However, this species was identified in Cave A during the 2005 cave biology survey.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Northern casemaker caddisfly (*Goera stylata*) SE: This species is a case-building caddisfly in the Goeridae family.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Agapetus caddisfly (*Agapetus caddisfly*) ST: This species is a case-building caddisfly in the Glossosomatidae family.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County, but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Refer to discussion under troglobitic crayfish.

Amphibians

Crawfish frog (*Rana areolata circulosa*) SE: The range for the northern crawfish frog (**Figure 5.17-5**) is the southwest and west central portions of Indiana. The frog normally lives in crayfish burrows and emerges at night to feed. Its habitat is in open, grassy, damp areas where there are burrows of the large, chimney-building crayfish.

Potential for occurrence: Moderate. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. Occurrence is possible, but not expected due to agricultural practices in the areas. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

Four-toed salamander (*Hemidactylium* scutatum) SE: Four-toed salamanders occur in isolated populations in coniferous and deciduous forests associated with still or slow-moving water that lacks fish.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated.

Common Mudpuppy (*Necturus maculosus*) SSC: The mudpuppy is found throughout Indiana; however, it is not collected often. It is a bottom dweller in lakes, ponds, impoundments, rivers and streams. Its numbers appear to have decreased since the 1940s.

Potential for occurrence: Moderate. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species List for Monroe County or Morgan County. This species was not observed during pedestrian field surveys.

Potential impact: None anticipated.

Birds

Barn owl (*Tyto alba*) SE: The barn owl (**Figure 5.17-6)** inhabits open and partly open habitats, grasslands, and farmlands mainly in the southern half of Indiana. This nocturnal, predatory bird

nests mainly in wooden barns, and thus occurs in agricultural areas with traditional farming practices.

Potential for occurrence: Moderate. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Morgan County, but is not listed for Monroe County. This species was not observed or heard in the Section 5 corridor during pedestrian field surveys.

Potential impact: Impacts are possible. Habitat utilized by the Barn owl is present along the Section 5 corridor. However individuals would likely avoid areas disturbed during construction activities. Any impact to this species would be temporary in nature and would not affect regional populations.

Henslow's sparrow (*Ammodramus henslowii*) SE: The Henslow's sparrow (**Figure 5.17-7**) inhabits moist or dry grasslands with scattered weeds and small shrubs. They migrate to marshes and open pine woods in the southeastern United States during the winter months.

Potential for occurrence: Present. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys. The species is considered present based upon a review of information contained in the *Breeding Bird Atlas Explorer (online resource, 2012. U.S. Geological Survey Patuxent Wildlife Research Center & National Biological Information Infrastructure. http://www.pwrc.usgs.gov/bba. Data compiled from: Indiana Breeding Bird Atlas 2005-2011. Interim results used with permission.).*

Potential impact: Impacts are possible. Habitat utilized by Henslow's Sparrow is present along the Section 5 corridor, however individuals would likely avoid areas disturbed during construction activities. Any impact to this species would be temporary in nature and would not affect regional populations.

Northern harrier (*Circus cyaneus*) SE: The northern harrier (**Figure 5.17-8**) is a medium-sized, long-winged, long-tailed hawk. Its habitat includes prairies, savannas, sloughs, wet meadows, and marshes. This ground-nesting raptor is an uncommon migrant and winter resident in grassy areas in Indiana, and a rare and local breeder. Although near the southern limit of its breeding range in Indiana, large strip mines reclaimed as grasslands are attractive to it, and some pairs breed in the southwestern counties. This species is found often in strip-mining areas restored to grasslands.

Potential for occurrence: Moderate. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County or Morgan County. This species was not observed or heard in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. No preferred breeding habitat exists in the Section 5 corridor. Northern harriers may use the area for feeding and roosting, but would likely not be impacted by any of the Section 5 alternatives.

Red-shouldered hawk (*Buteo lineatus*) SSC: The red-shouldered hawk's habitat includes bottomland hardwood forests, riparian areas, upland deciduous forest, mixed deciduous-conifer forest, swamps, marshes, and rivers. It reaches a length of 16 inches and a wingspan of 40 inches and has a fairly long tail and broad wings. The red-shouldered hawk preys on small mammals, birds, reptiles, and amphibians. It is most common in the southern third of the state.

Potential for occurrence: Moderate. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: Impacts are possible. All alternatives impact upland deciduous forest and some bottomland hardwood forests throughout the length of the Section 5 corridor.

Mammals

Indiana bat (*Myotis sodalis*) SE, FE: Refer to the Federally-Listed Fauna section for Indiana bat discussions.

Evening bat (*Nycticeius humeralis*) SE: The species is found from the eastern coast of the United States to the Midwest, and from southern Michigan south into eastern Mexico. Summer maternity colonies have been found in buildings and hollow trees; in the winter, bats of this species have been found roosting in palm fronds in Florida. Females and young appear to migrate fairly long distances. They roost in trees and man-made structures. The evening bat rarely enters caves or mines. The evening bat prefers to forage along edges of mature forests, in clearings, and over waterways.

Potential for occurrence: Present. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County, but is listed for Morgan County. Seven evening bats were captured during the mist-netting surveys conducted for Section 5 in 2004, and three were captured in Section 5 in 2012. Evening bats are likely to be present along larger rivers near farmlands as noted in Sections 1-4.

Potential impact: Impacts are possible. Preferred habitat of the evening bat exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations of this species are not expected.

Little brown bat (*Myotis lucifugus*) SSC (Figure 5.17-10): The species is found throughout most of North America. Little brown bats feed near or over water, mainly on aquatic insects such as caddis flies, mayflies, and midges, and typically consume half their body weight in insects each night.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. Thirty individuals of this species were captured during the mist-netting surveys conducted for Section 5 in 2004, and six were captured in Section 5 in 2005. Twenty-eight little brown bats

were captured in Section 5 during the 2012 surveys. Little brown bats are present in and near the Section 5 corridor.

Potential impact: Impacts are possible. Preferred habitat of the little brown bat exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Eastern tricolored or pipistrelle (*Perimyotis subflavus*) SSC: This small bat occurs throughout most of eastern North and Central America and in parts of the Midwestern United States. This species is a forest species. Some eastern pipistrelles migrate several hundred miles in late summer and early fall to caves where they hibernate.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. Thirty-three individuals of this species were captured during the mist-netting surveys conducted for Section 5 in 2004, and one was captured in Section 5 in 2005. Forty-four eastern pipistrelles were captured in Section 5 during the 2012 surveys. Eastern pipistrelle bats are present in and near the Section 5 corridor.

Potential impact: Impacts are possible. Preferred habitat of the eastern pipistrelle exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Eastern red bat (*Lasiurus borealis*) SSC: This species is common, and its range is from far southern Canada throughout most of the United States and Mexico, and farther south through Central America and into South America. This species is a forest species. The eastern red bat requires trees and shrubs for roosting. Although the eastern red bat is solitary, it migrates in groups.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. Thirty-three individuals of this species were captured during the mist-netting surveys conducted for Section 5 in 2004, and two were captured in Section 5 in 2005. One-hundred and nineteen eastern red bats were captured in Section 5 during the 2012 surveys. Eastern red bats are present in and near the Section 5 corridor.

Potential impact: Impacts are possible. Preferred habitat of the eastern red bat exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Northern myotis (*Myotis septentrionalis*) SSC: The species is widely but sparsely distributed across forested regions of the Eastern United States, across Southern Canada and extending down into Florida. They roost in buildings, under loose bark, and in tree cavities, and hibernate in caves and mines.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County.

Thirty individuals of this species were captured during the mist-netting surveys conducted for Section 5 in 2004, and one was captured in Section 5 in 2005. Thirty-six northern myotis were captured in Section 5 during the 2012 surveys. Northern myotis bats are present in and near the Section 5 corridor.

Potential impact: Impacts are possible. Preferred habitat of the northern myotis exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Silver-haired bat (*Lasionycteris noctivagans)* SSC: Silver-haired bats occur in both grassland and forest and are abundant in old-growth forest. They start foraging after sunset, finding their prey at treetop level or over streams and ponds. Seasonal changes in the numbers of bats have been observed: more individuals are seen farther north in the summer and farther south in winter, suggesting that the species is probably migratory. However, some individuals may not migrate.

Potential for occurrence: Present. This species is not listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County or Morgan County. Seven silver-haired bats were captured in Section 5 during the 2012 surveys.

Potential impact: Impacts are possible. Preferred habitat of the silver-haired bat exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Hoary bat (*Lasiurus cinereus*) SSC: Hoary bats are the most widespread of all bats in the United States, although they are rare in most of the Eastern United States. They are thought to prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. Six individuals of this species were captured during the mist-netting surveys conducted for Section 5 in 2004, and one was captured in Section 5 in 2005. Seven hoary bats were captured in Section 5 during the 2012 surveys. Hoary bats are present in and near the Section 5 corridor.

Potential impact: Impacts are possible. Preferred habitat of the hoary bat exists within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Bobcat (*Lynx rufus*) SSC (Figure 5.17-11): The bobcat is a medium-sized cat that prefers to prey upon rabbits but will also prey on smaller mammals. This species' habitat includes large tracts of various habitats including deciduous-coniferous woodlands, forest edge, hardwood forests, swamps, forested river bottomlands, and brushlands.

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys;

however, it has been tracked by IDNR in the adjacent Section 4. Any large, wooded areas along the Tier 2 Section 5 corridor could harbor bobcats. Morgan-Monroe State Forest and its associated large forested area are located adjacent to the Section 5 corridor. Other large forested tracts are also present throughout the length of Section 5.

Potential impact: Impacts are possible. Preferred habitat of the bobcat exists adjacent to the existing SR 37 facility. However, due to this species large range and ability to avoid construction activities, impacts to individuals may occur, but is expected to be temporary in nature. No impacts to regional populations are expected. Wildlife crossings in section 5 will be provided to facilitate movement of this species and provide habitat connectivity.

American Badger (*Taxidea taxus*) SSC: The American badger inhabits open areas and brushlands. The badger is not common anywhere in Indiana, but it has been increasing its range and now occurs essentially throughout the state where suitable habitat is present.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Preferred habitat of the American badger does not exist within or adjacent to the Section 5 alternatives.

Least weasel (*Mustela nivalis*) SSC (Figure 5.17-12): The least weasel inhabits open areas, farmland, riparian areas, and woodlands, and it often co-exists with humans. It is a tiny weasel with brown fur above and white below. It is presumably a northern species in Indiana, but has been found in Indiana south to Vigo, Clay, and Monroe counties.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Preferred habitat of the least weasel does not exist within or adjacent to the Section 5 alternatives.

River Otter (*Lutra canadensis*) SSC: River otters are adapted to a variety of aquatic habitats from marine environments to high-elevation mountain lakes. Optimum habitat for river otters includes slow-moving water with deep pools, abundant riparian vegetation, and plentiful fish.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Preferred habitat of the river otter does not exist within or adjacent to the Section 5 alternatives.

Reptiles

Kirtland's snake (*Clonophis kirtlandii*) SE: The Kirtland's snake is a small, slender snake that inhabits moist to wet "grassy" habitats in close proximity to water bodies, such as open and woodland ponds, streams and marshes (Center for Reptile and Amphibian Conservation and Management, 2006).

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Wet "grassy" habitat in close proximity to water bodies is being impacted, but such areas are generally mowed for hay or grazed.

Western ribbon snake (*Thamnophis proximus*) SSC: Although records for this snake are for the most part in northwestern Indiana, there is one record from Monroe County and apparently valid literature records from Vigo County. It has an inferred range in southwestern Indiana principally within the Wabash Lowland Region.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County but is not listed for Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. The Section 5 corridor is not located in the Wabash Lowland Region, which is noted to be the principal range of this species in southwestern Indiana.

Rough green snake (*Ophoedrys aestivus*) SSC: The rough green snake inhabits small trees, shrubs and vines, especially near lakes and streams along forest edges. The snake can reach a length of 2 ½ to 3 feet and is non-venomous.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Preferred habitat of the rough green snake does not exist within or adjacent to the Section 5 alternatives.

Timber rattlesnake (*Crotalus horridus*) SE (Figure 5.17-13): The timber rattlesnake has a large range in the eastern United States, but occurrence is spotty. The greatest abundance of this species is found at the high-density denning sites of the Appalachian Mountains from northeastern Alabama to Pennsylvania (Brown 1993). In Indiana, the species has been reported in Brown, Lawrence, Jackson, Martin, Orange, Perry, and Clark counties. Ideal habitat for the species in the central Midwest is described by Minton (1972) as consisting of high, dry ridges with oak-hickory forests and open areas.

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County and Morgan County. This species was not observed in the Section 5 corridor during field surveys.

Potential impact: None anticipated. Preferred habitat of the timber rattlesnake does not exist within or adjacent to the Section 5 alternatives.

Eastern box turtle (*Terrapene carolina*) SSC (Figure 5.17-9): This is a small terrestrial turtle that possesses a high, domelike shell and a hinged plastron that allows for total shell closure. The carapace can be of variable coloration, but is usually brownish or black with a yellowish or orange-ish radiating pattern of lines, spots or blotches. They have a horny beak, stout limbs, and their feet are webbed only at the base. Males usually have red irises (Center for Reptile and Amphibian Conservation and Management, 2006).

This terrestrial turtle lives in moderately drained deciduous or mixed woodlands, particularly ones with sandy soil. They are found almost exclusively on land and can be observed in thickets, fields, pastures, vegetated dunes, marshes and the edges of bogs. Areas with the highest turtle densities favor moist, open forest with ravines or mid-sized slopes (Center for Reptile and Amphibian Conservation and Management, 2006).

This turtle is found primarily in the eastern half of the United States. Its range extends as far north as southern Maine and the northwest of the Michigan Lower Peninsula, south to southern Florida and west to eastern Kansas, Oklahoma, and Texas. The eastern box turtle is considered uncommon to rare in the Great Lakes region; however, populations can be locally common in areas not bisected by heavily-traveled roads. In the Midwest, they are a species of Special Interest in Ohio, and of Special Concern in Michigan. They are not found in Wisconsin, Minnesota, Iowa or Missouri (Center for Reptile and Amphibian Conservation and Management, 2006).

Potential for occurrence: Present. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Monroe County but is not listed for Morgan County. Although this species has not been observed in the Section 5 corridor during field surveys, individuals have been observed in Section 4 to the south. It is likely eastern box turtles occur in Section 5 as well, due to close proximity and habitat similarities to Section 4.

Potential impact: Impacts are possible. Preferred habitat of the eastern box turtle exist within and adjacent to the existing SR 37 facility. Section 5 alternatives have the potential to affect individuals of this species. However, impacts to regional populations are not expected.

Alligator snapping turtle (*Macrochelys temminckii*) SE: This is a very large turtle with a huge head, strongly hooked jaws, an extra row of scutes along each side of the shell. Preferred habitat consists of slow-moving, deep water of rivers, sloughs, oxbows, and canals or lakes associated with rivers; also swamps, bayous, and ponds near rivers, and shallow creeks that are tributary to occupied rivers, sometimes including swift upland streams. Usually it occurs in water with a mud bottom and some aquatic vegetation but may use sand-bottomed creeks. Within streams, alligator snapping turtles may occur under or in logjams, beneath undercut banks, under rock shelters, or

in deep holes. These turtles are highly aquatic and rarely are found out of water (except during nesting).

Potential for occurrence: Low. This species is listed in IDNR's Indiana County Endangered, Threatened and Rare Species Lists for Morgan County, but not Monroe County. This species was not observed in the Section 5 corridor during pedestrian field surveys.

Potential impact: None anticipated. Preferred habitat of the alligator snapping turtle does not exist within or adjacent to the Section 5 alternatives.

5.17.4 Mitigation

Federally-Listed Species

In addition to the Tier 1 Reasonable and Prudent Measures (RPMs) contained within the 24 August 2006 Incidental Take Statement for Tier 1 of the I-69 Evansville to Indianapolis project (and subsequently updated in the May 25, 2011 and July 24, 2013 amendments) the Service believes the following Tier 2 RPMs are necessary, appropriate, and reasonable for further minimizing incidental take of Indiana bats in Section 5 of I-69:.

1. In the Section 5 Tier 2 BA (page 114), the FHWA proposed to implement numerous conservation measures and mitigation efforts as part of their proposed action and these measures are hereby incorporated by reference (including the recently added measure to work with private landowners to avoid tree clearing during the time period Indiana bats are present). These measures will benefit a variety of wildlife species, including Indiana bats. FHWA should take necessary steps to ensure that successful implementation of all conservation measures is achieved to the fullest extent practicable in a timely manner.

2. The implementation status of all the proposed conservation measures, mitigation efforts, and research and any related problems need to be monitored and clearly communicated to the Service on an annual basis.

The following terms and conditions were included in the Section 5 Tier 2 BO and will be completed as part of this project.

1. The FHWA, in consultation with the Service, must develop detailed, site-specific final mitigation plans for each secured mitigation site within six (6) months of securing the site or within six (6) months of the issuance of this BO, whichever is later. All mitigation sites must be identified and secured within 3 years of the issuance of this biological opinion, including the development of final mitigation plans. The mitigation plans will not be conceptual, but rather will contain detailed descriptions for each phase of mitigation including 1) initial construction and establishment, 2) 5-year, post construction monitoring phase, and 3) long-term management. The Section 5 final mitigation plans will address and/or establish the following: quantifiable criteria and methods for assessing success of all mitigation plantings and functionality of constructed wetlands and streams, approved lists of tree/plant species to be planted (and their relative abundance/%), approved lists of herbicides for weed control, proposed construction

schedules, annual post-construction monitoring schedules, and a long-term, ongoing management/stewardship strategy.

To ensure timeliness, the FHWA must begin construction and/or reforestation within the Section 5 Mitigation Areas either before (the most preferable option) or during the first summer reproductive season (1 April – 30 September) immediately after any I-69 related tree clearing or construction begins in Section 5 anywhere within each 2.5-mile radius maternity area (see Figure 7 [of the Section 5 Tier 2 BO]). Once initiated, all Service-approved construction and tree plantings within the Section 5 Mitigation Areas must be completed within 3 calendar years.

2. FHWA will provide the Service with a written annual report that summarizes the previous year's monitoring, conservation and mitigation accomplishments, remaining efforts, and any problems encountered within Section 5. This annual report will be completed throughout the 5-year post-construction monitoring period. The annual report for Section 5 may be a stand-alone document or included as part of the annual report required under the Tier 1 Term and Condition Number 2 (amended May 25, 2011 and July 24, 2013).

The revised Tier 1 BO issued by USFWS listed conservation measures to minimize impacts and ensure that the construction of I-69 is not likely to jeopardize the continued existence of any federally-listed, threatened, or endangered species, or result in the destruction or adverse modification of their Critical Habitat. The following conservation measures were jointly developed by the FHWA, INDOT, and the USFWS during informal consultation and were subsequently incorporated into the Tier 1 BA and the Tier 1 BA Addendum as part of the official Proposed Action for the I-69 project. Since conservation measures are part of the Proposed Action, their implementation is required under the terms of the consultation. These measures were specifically designed to avoid and minimize impacts of the proposed action on Indiana bats and bald eagles and to further their recovery. Where text included in the Section 5 Tier 2 DEIS has received a status update or has otherwise changed due to planning or design modifications, it is noted as *Update* following the applicable text. In the event of any differences of wording between the conservation measures listed below and the revised Tier 1 BO, the latter takes precedence.

5.17.4.1 – Federally-Listed Species – Indiana Bat (*Myotis sodalis*)

A. Context Sensitive Solutions

Winter Habitat

1. **Alignment Planning—**Efforts will be made to locate Interstate alignments beyond 0.5 miles from known Indiana bat hibernacula.

   Status – All alternatives have been located greater than 0.5 miles from any of the 15 known Indiana bat hibernacula.

2. **Blasting—**Blasting will be avoided between September 15 and April 15 in areas within 0.5 miles of known Indiana bat hibernacula. All blasting in the WAA will follow the specifications developed in consultation with the USFWS and will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of nearby caves serving as Indiana bat hibernacula.

   Status – To be completed.

3. **Hibernacula Surveys—**A plan for hibernacula surveys will be developed and conducted in consultation with and approved by USFWS during Tier 2 studies.

   Status – The survey plan was developed in consultation with USFWS and fieldwork has been completed. To date, 373 cave records were evaluated and 250 caves were visited in the field. Of these, 61 caves were surveyed for Indiana bats in 2004-2005 and 16 caves had fall harp trapping in 2005. The 16 caves that were harp trapped in the fall of 2005 also had internal cave surveys completed in December 2005. Three new Indiana bat hibernacula were identified as a result of these surveys.

4. **Karst Hydrology—**To avoid and minimize the potential for flooding, dewatering, and/or microclimate (i.e., temperature and humidity) changes within hibernacula, site-specific efforts will be made to minimize changes in the amount, frequency, and rate of flow of roadway drainage that enters karst systems that are determined to be hydrologically connected to Indiana bat hibernacula.

   Update – No additional roadway runoff from I-69 Section 5 above the existing SR 37 levels will be directed to karst features with hydrological connectivity to Indiana bat hibernacula.

Autumn/Spring Habitat

5. **Tree Removal—**To minimize adverse effects on bat habitat, tree (three or more inches in diameter) cutting will be avoided within five miles of a known hibernaculum. If unavoidable, cutting will only occur between November 15 and March 31.

   Update – USFWS has clarified that cutting can only occur within the WAA between November 16 and March 31. No tree cutting (trees with a diameter of three inches or more) within the WAA will occur between April 1 and November 15.

Summer Habitat

6. **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.

7. **Tree Removal—**Tree and snag removal will be avoided or minimized as follows:

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 the IDNR State Forest timber management plan.

   Update – The Revised Tier 1 BO and the Section 1 Tier 2 BO include the dates of April 15 to September 15. However, after that BO was issued, USFWS provided (on February 14, 2008) revised tree clearing restriction dates of April 1 to September 30 for areas not within the Indiana bat WAA. Within the WAA, tree cutting can only occur between November 16 and March 31. No tree cutting (trees with a diameter of three inches or more) within the WAA will occur between April 1 and November 15. The I-69 project is governed by the conditions of the BO; however, INDOT and FHWA have adopted the updated tree clearing restriction dates for the project.

   In addition, should USFWS so desire, INDOT and FHWA will assist USFWS in distributing letters to the property owners in the Section 5 corridor designed to increase awareness of the impact of tree harvesting on Indiana bats. INDOT will also send a letter to each property owner in the right-of-way, stating that INDOT is not working with any logging companies in the development of I-69. This information should prevent any confusion on the part of the landowners that INDOT advocates, condones or permits logging on the property prior to the time when INDOT purchases the property for the Project. INDOT and FHWA will also work with USFWS to identify logging activities within the project area, and INDOT will notify USFWS of any logging activity discovered. This notice will allow USFWS to take appropriate action under the ESA as warranted.

8. **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 five days unless otherwise determined by USFWS.

   Status – Completed. For the entire I-69 project, a total of 148 mist net sites were surveyed (24 located in Section 5) in 2004, and 49 sites (three located in Section 5) were surveyed or resurveyed in the summer of 2005. Captures in Section 5 included four adult male Indiana bats and one lactating female Indiana bat from five sites. Two of these captures occurred approximately within 1,000 feet of the proposed I-69 centerline. Two roosts were found in Section 5 from radio tagging of the bats. These roost locations were not within the Section 5 corridor and were not identified as maternity roost colonies. Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. Three mist net sites were surveyed for a total of 12 net nights. One lactating female Indiana bat was captured. The lactating female was radio-tagged

and successfully tracked to four new roost trees. None of these roosts were located within the project corridor.

Additional mist netting surveys were completed during the summer of 2012. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were captured and tracked to a total of three roost trees. A third adult male was captured and tracked to a batbox near a residence. Two pregnant females were captured and successfully tracked to a total of three roosts. None of these roosts were located within the project corridor.

9. **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 259 bridges and culverts were inspected for Indiana bats. Of the bridges surveyed, Indiana bats were found under one bridge in the Section 3 study corridor. (Note: Thirteen bridges and culverts were surveyed in Section 5; however, no Indiana bats were found roosting under the bridges and culverts associated with the Section 5 corridor.) At a bridge associated with the Section 3 corridor, five of the 13 Indiana bats captured in the 2004 Indiana bat study area were found. In 2005, an assessment at the same location found nine Indiana bats during the day and six at night. INDOT and FHWA have worked with USFWS to provide fencing below this bridge at both ends to prevent human disturbance.

   b. **Bat-friendly Bridges—**Where feasible and appropriate, Interstate and access road bridges will be designed to provide suitable night roosts for Indiana bats and other bat species in consultation with USFWS.

      Update – Due to concerns relative to attracting bats to the high-speed interstate facility, it is currently proposed to not include any bat friendly bridges on I-69.

   c. **Floodplains—**Where reasonable and appropriate, floodplains and oxbows will be bridged to protect environmentally sensitive areas.

      Update – To be completed. Although it is not anticipated that any floodplains in Section 5 will be bridged in their entirety, floodplain encroachments will be minimized, where reasonable, by utilizing existing bridge crossings and through design practices such as longer bridges and perpendicular stream crossings where new crossings are warranted. The Section 5 study corridor contains several 100-year floodplains. These mapped floodplains include: Indian Creek and the eastern edge of the White River floodplain; the confluence of Little Indian Creek, Jordan Creek, and Buckner Branch of Little Indian Creek; Bryant Creek; the confluence of Beanblossom Creek and Griffy Creek; and, Stout Creek. With the exception of Little Indian Creek (transverse crossing), and Bryant Creek (longitudinal crossing), it is difficult to precisely determine if crossings shall be considered longitudinal or transverse because

the floodplain is so broad in those areas. A final hydraulic design study will be completed during the design phase to determine the length of the spans, and a summary of this will be included with the Field Check Plans and Design Summary.

10. **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.

    Status – To be completed.

All Habitats

11. **Medians and Alignments—**Variable-width medians 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.

    Status – A typical median width of 60 feet is proposed for Section 5. No trees will be left in the median for the majority of the Section 5 corridor with the exception of a small stretch (approximately 1.4 miles) of split roadway north of Burma Road and Bryant's Creek Road in the area of the Morgan-Monroe State Forest. This split minimizes impacts to forest habitat, the State Forest, and streams.

12. **Minimize Interchanges—**Efforts have been made to limit interchanges in karst areas, thereby limiting access and discouraging secondary growth and impacts. In Tier 2, further consideration will be given to limiting the location and number of interchanges in karst areas.

    Status – Interchanges were designed to minimize impacts in karst areas. Specific design elements used included folded ramps, the use of smaller urban style interchanges in rural areas, using existing interchange locations when possible, using existing overpasses when possible, and using existing pavement layouts when possible.

13. **Memoranda of Understandings (MOUs)—**Construction will adhere to the Wetlands MOU (dated January 28, 1991) and the Karst MOU (dated October 13, 1993). The Wetland MOU minimizes impacts to the Indiana bat by mitigating for wetland loss; and creating bat foraging areas at greater ratios than that lost to the project. The Karst MOU avoids and minimizes impacts to the Indiana bat by numerous measures that protect sensitive karst features including hibernacula.

    Status – Wetland impacts associated with Section 5 will be mitigated in accordance with the Wetlands MOU. Procedural steps 1 through 4 of the 17 procedural steps outlined in the Karst MOU are being addressed in Tier 2. Additional procedural steps will be addressed during design.

14. **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.

       Status – Procedural steps 1 through 4 of the Karst MOU are being addressed in Tier 2. Additional procedural steps will be addressed during design.

    b. **Roadside Drainage—**Where appropriate, roadside ditches will be constructed that are grass-lined and connected to filter strips and containment basins.

       Status – Specific impacts to karst features and treatment of drainage have not been determined at this time. Impacts to specific karst features will be addressed via consideration of alternative drainage and other appropriate mitigation features during final design. Such treatment measures include peat and sand filters, gravel filters, vegetated buffers, and lined spill or run-off containment structures.

    c. **Equipment Maintenance—**Construction equipment will be maintained in proper mechanical condition.

       Status – To be completed.

    d. **Spill Prevention/Containment—**The design for the roadway will include appropriate measures for spill prevention/containment.

       Status – Special measures including diversions of highway runoff from direct discharge off of bridge decks into streams, and containment basins to detain accidental spills, will be incorporated into final design plans for perennial streams within the Indiana bat maternity colony areas to address water quality concerns associated with Indiana bats.

       Measures for spill prevention/containment will be included in the roadway design. Contractors will be required to provide an acceptable spill response plan. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill response effort. An emergency response telephone number is also required. The Rule 5 Permit that contractors must obtain will require that each contractor have spill containment plans in their contract documents.

    e. **Herbicide Use Plan—**The use of herbicides will be minimized in environmentally sensitive areas, such as karst areas that are protective of Indiana bats and their prey. Environmentally sensitive areas will be determined in coordination with INDOT as appropriate. Appropriate signage will be posted along the interstate to alert maintenance staff.

       Status – The use of herbicides will be minimized within the environmentally sensitive habitats. Environmentally sensitive habitats within Section 5 include the Cave A and

Cave B recharge areas. The limits for the low salt/no spray zone would be along I-69 continuing from Section 4 to 200 feet north of the existing Chambers Pike intersection along SR 37. Once I-69 is constructed there will be an overpass at Chambers Pike.

f. **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.

   Status – 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. Locations that may be considered, but are not limited to, stream crossings and the interchange locations.

g. **Low Salt Zones—**A low salt and no spray strategy will be developed for this project. A signing strategy for these items will also be developed. The low-salt zones will be determined in coordination with INDOT. The low salt zones will be delineated in the section-specific Tier 2 BAs.

   Update – In Section 5, Bloomington Karst extends from approximately Clear Creek along SR 37, south of the Section 5 corridor, northward along SR37 to approximately Arlington Road. Bloomington North Karst extends from the vicinity of Arlington Road north to the southern slope of the Beanblossom Valley. Simpson Chapel Karst extends from the northern slope of the Beanblossom Valley and continues north to just south of Chambers Pike. The limits for the low salt/no spray zone would be along I-69 continuing from Section 4 to 200 feet north of the existing Chambers Pike intersection along SR 37. Once I-69 is constructed there will be an overpass at Chambers Pike.

h. **Bridge Design—**Where feasible and appropriate, bridges will be designed with no 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.

   Status – To be completed.

15. **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 karst. Erosion control measures will be put in place as a first step in construction and maintained throughout construction.

Update – BMPs will be used in the construction of this project to minimize impacts of erosion. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Temporary erosion control devices, such as silt fencing, check dams, sediment basins, inlet protection, sodding, and other appropriate BMPs will be used to minimize sediment and debris in tributaries and karst features within the project area. Timely revegetation will be implemented after soil disturbance and monitored for coverage and viability. Any riprap used 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. INDOT will complete contractor compliance inspections on a regular basis to monitor control erosion and sediment on the project.

16. **Parking and Turning Areas—**Parking and turning areas for heavy equipment will be confined to sites that will minimize soil erosion and tree clearing, and will avoid environmentally sensitive areas, such as karst.

    Status – To be completed.

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, Ray's Cave, Sexton Springs Cave, 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 the USFWS.

   Where appropriate, mitigation sites will be planted with a mixture of native trees that are 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 protected in perpetuity via conservation easements.

   Status –The Section 5 Tier 2 BA identifies a total of 20 properties for mitigation. Seven (7) focus areas were targeted for Section 5 mitigation: West Fork (Bryant Creek)

Maternity Colony, Lambs Creek Maternity Colony, Beanblossom Bottoms Nature Preserve Maternity Colony, Crooked Creek Maternity Colony (Section 6), Morgan-Monroe State Forest, Beanblossom Creek, and Maple Grove Road Rural Historic District. The 20 sites include properties to be acquired for preservation and those to be acquired for future restoration and replanting activities. These 20 sites are expected to provide a total of more than 1,500 acres of mitigation lands. Additional detail on these sites is presented in the Section 5 Tier 2 BA (see **Appendix LL1**, *Redacted Section 5 Tier 2 Biological Assessment).*

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

   a. Farmed wetlands 1 to 1.

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

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

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

   Update – To be completed. The MOU was developed to ensure that wetland impacts are avoided, minimized, and mitigated to compensate for the loss of wetland functions and values. The Refined Preferred Alternative 8 impacts approximately 1.78 acres of emergent wetlands, 1.04 acres of scrub/shrub wetlands, 7.27 acres of palustrine unconsolidated bottom wetlands (ponds), 0.02-acre of aquatic bed wetlands, and 0.59-acre of forested wetlands. Based on the range of mitigation ratios described in **Section 7.3.9**, *Wetland Impacts*, the total area needed for mitigation of impacts to wetlands for Refined Preferred Alternative 8 is 10.61 acres (including 25% buffer).

3. **Forest Mitigation—**The Tier 1 *Forest and Wetland Mitigation and Enhancement Plan* (**Appendix S,** *Revised Tier 1 Conceptual Forest and Wetland Mitigation Plan & Comparison of Tier 1 Plans*) identifies the general location of potential mitigation sites for upland and bottomland forests. 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 USFWS 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. 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. Forest impacts occurring within each of the thirteen[11] 2.5-mile radius maternity colony areas

[11] Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.

would be mitigated by replacement (i.e. planting of new forest and purchase of existing) at approximately 3 to 1, preferably in the vicinity of the known roosting habitat.

Update – To be completed. For the I-69 Evansville to Indianapolis project as a whole, FHWA and INDOT committed to mitigate impacts to upland forests at a 3 to 1 ratio. Mitigation goals are to replace direct forest impacts at a minimum 1 to 1 ratio and provide up to a 2 to 1 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. The potential impacts to upland forests due to I-69 Section 5 alternatives vary from approximately 227.66 acres (Refined Preferred Alternative 8) to 433.16 acres (Alternative 4). The total area needed for mitigation based on the 3 to 1 ratio would range from approximately 682.98 to 1,299.48 acres of mitigation. Of this total, 227.66 to 433.16 acres would be reforestation of agricultural land, and the remainder preservation of existing forest. All forest mitigation lands will be protected in perpetuity via direct purchase or conservation easements.

In Section 5, the proposed conceptual forest mitigation sites are described above. 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. The species to be planted and the long-term management of these mitigation sites will be coordinated with the agencies relative to the conditions of the necessary permits and authorizations.

C. Conservation / Preservation

Winter Habitat

1. **Hibernacula Purchase—**Opportunities will be investigated to purchase at fair market value from "willing sellers," one or more Indiana bat hibernaculum(a) including associated autumn swarming/spring staging habitat. After purchase and implementation of all management efforts, the hibernaculum(a) and all buffered areas will be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements.

   Status – Three Indiana bat hibernacula within the WAA (including two Priority 1A caves) and one hibernaculum outside of the WAA have been purchased by INDOT.

2. **Hibernacula Protection—**With landowner permission, investigations will be coordinated with the USFWS on acquiring easements to erect bat-friendly, angle-iron gates at cave entrances. These gates prevent unauthorized human access and disturbance of hibernacula, while maintaining free airflow within the hibernacula within the Action Area. Gates will be constructed according to designs from the American Cave Conservation Association. Effects of gates on water flow and flash flooding debris will

be carefully evaluated before and after gates are installed. Other structures (e.g., perimeter fencing) or techniques (e.g., alarm systems and signs) may also be used.

Status – To be completed.

Autumn/Spring Habitat

3. **Autumn/Spring Habitat Purchase—**Any hibernaculum(a) purchased as part of conservation for Indiana bat winter habitat will include associated autumn swarming/spring staging habitat to the maximum extent practicable. Any purchase will be from a willing seller at fair market value. In addition, some parcels containing important autumn swarming/spring staging habitat may be acquired near key hibernacula regardless of whether the hibernacula are acquired themselves. Any acquired autumn swarming/spring staging habitat would be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements. The purchase of forest would be included as part of the 3 to 1 forest mitigation.

   Status – Three Indiana bat hibernacula within the WAA (including two Priority 1A caves) and one hibernaculum outside of the WAA have been purchased by INDOT. These purchases also include autumn/spring habitat.

Summer Habitat

4. **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.

   Status – To be completed.

D. Education / Research / Monitoring

Winter Habitat

1. **Monitor Gated Caves—**All caves that have gates erected as mitigation for this project will have their temperature, humidity, bat activity and populations monitored before and for three years after gate installation. Infra-red video monitoring or other techniques deemed acceptable by USFWS will be conducted for a minimum of two nights in the appropriate season at each newly installed cave gate to ensure the bats are able to freely ingress and egress. Data acquisition will use a number of data loggers minimizing the need for entry into these caves. All precautionary measures will be taken to minimize potential impacts to hibernating Indiana bats.

   Status – To be completed.

2. **Cave Warning Signs—**Where deemed appropriate by USFWS, the following may be done: signs will be posted that warn the public and discourage cave entry at hibernacula within/near the Action Area. Signs should be placed so that they do not block air flow into the cave and do not draw attention to the entrance and attract violators (USFWS 1999). Also, light-sensitive data loggers may be placed within the caves to assess the effectiveness of the warning signs at deterring unauthorized entries. Permission from the landowners must be obtained before erecting such signs and installing data loggers.

   Status – Cave warning signs will be placed near the entrances of caves as appropriate.

3. **Biennial Census—**Total funding of $50,000 will be provided to supplement the biennial winter census of hibernacula within/near the proposed Action Areas. Funding will be made available in consultation with the USFWS.

   Status – To be completed.

Autumn/Spring Habitat

4. **Autumn/Spring Habitat Research—**Total funding of $125,000 will be provided for research on the relationship between quality autumn/spring habitat near hibernacula and hibernacula use within/near the Action Area. This research should include methods attempting to track bats at longer distances such as aerial telemetry or a sufficient ground workforce. A research work plan will be developed in consultation with the USFWS. Funding will be made available as soon as practical after Notice to Proceed is given to the construction contractor for the applicable Tier 2 Section (or earlier).

   Status – To be completed.

Summer Habitat

5. **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[12] 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.

   Status – Additional mist netting surveys were completed during the summer of 2012. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats,

[12] Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wise total to 16 maternity colonies.

and all were tracked to at least one specific roost. Two adult males were tracked to a total of three roost trees. A third adult male was tracked to a batbox near a residence. Two pregnant females were successfully tracked to a total of three roosts. None of these roosts were located within the project corridor. Depending upon when construction begins for Section 5, the 2012 surveys may serve as the pre-construction surveys.

General

6. **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.

   Status – To be completed.

7. **GIS Information—**Geographic Information System (GIS) maps and databases developed and compiled for use in proposed I-69 planning will be made available to the public. These data provide 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.[13] In addition, detailed GIS forest data (five-meter resolution) has been developed for the 13[14] 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 others to examine effects on the Indiana bat, other species, or ecosystems over time.

   Status – Completed.

Additional Conservation Measure Resulting from Tier 1 Reinitiation

The following conservation measure was developed by INDOT and FWHA in consultation with USFWS during the third Tier 1 reinitiation. It is included in the Amendment 2 to the revised Tier 1 BO and the Tier 2 Section 5 BO.

1. FHWA and INDOT propose to develop an voluntary agreement with the interested landowners, such as a "right of entry" agreement or other type of covenant, to pay the landowner to limit the time of year in which they harvest their property; this time period would be limited to the late fall and winter when Indiana bats are not present in the forested areas.

[13] Indiana Geographic Information Council, IndianaMAP, http://maps.indiana.edu/ (Last accessed 3/29/2013).

[14] Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.

In addition to the conservation measures listed above, the following conservation recommendations for the Indiana bat were included in the Amendment 2 to the Tier 1 BO. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action/program on listed species or Critical Habitat, to help implement recovery plans, or to develop information. Conservation recommendations generally do not focus on a specific project, but rather on an agency's overall program.

1. Working with the Service, develop national guidelines or best management practices for addressing Indiana bat issues associated with FHWA projects within the range of the Indiana bat, including measures to avoid or minimize private landowner impacts to the species prior to state and/or federal acquisition.

2. Provide funding to expand on scientific research and educational outreach efforts on Indiana bats in coordination with the Service's BFO.

3. In coordination with the BFO, purchase or otherwise protect additional Indiana bat hibernacula and forested swarming habitat in Indiana.

4. Provide funding to staff a full-time Indiana bat Conservation Coordinator position within the BFO, which has the Service's national lead for this wide-ranging species.

5. Provide funding for research to address WNS in bats.

FHWA and INDOT have no current plan to commit additional funding to implement these conservation recommendations. However, both INDOT and FHWA continue to work with the USFWS to provide information and develop BMPs associated with highway development, management and maintenance to assist in the conservation of the Indiana bat.

5.17.4.2 – Other Federally-Protected Species – Bald Eagle *(Haliaeetus leucocephalus)*

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 BB**, *Revised Tier 1 Biological Opinion and Amendments.*

Regarding the recent change in status of the bald eagle, on June 28, 2007, the Secretary of the Interior announced that the bald eagle would be removed from the endangered species list. In the announcement the Secretary noted that the bald eagle would continue to be protected by the Bald and Golden Eagle Protection Act and the MBTA. Both of these federal laws prohibit the "taking" of bald eagles. In guidance issued in June 2007 the Department of the Interior stated that USFWS would honor existing ESA authorizations in place before the effective date of the delisting. The guidance indicates that USFWS does not intend to seek prosecution of a "take" of any bald eagle under either the MBTA or the Bald and Golden Eagle Protection Act, if the "take" is in full compliance with the terms and conditions of an incidental take statement issued to the action agency.

A Bald and Golden Eagle Protection Act permit from the USFWS was acquired for this project for the bald eagle on June 25, 2009 (**Appendix X**, *Bald Eagle Permits*). This permit includes all six Sections of I-69. FHWA and INDOT intend to comply fully with the terms and conditions imposed by the incidental take statement that is included in the August 24, 2006, revised Tier 1 BO, as it proceeds with this project. Conservation measures developed for the bald eagle as part of the Tier 1 BA and Tier 1 BA Addendum will be completed as a condition of the permit, despite the species delisting. A bald eagle nest has been identified near the Section 5 corridor, located approximately 0.5 mile from existing SR 37 and approximately 0.3 mile from proposed local access road improvements. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines. INDOT is attempting to purchase the parcel containing the bald eagle nest for purposes of mitigation.

5.17.5 Summary

This study has included an evaluation of potential impacts on federally-listed threatened and endangered species, as well as state-listed species. The evaluation of impacts on federally-listed species has been carried out in consultation with USFWS under Section 7 of the ESA.

In Section 7 consultation during the preparation of the Tier 1 EIS, USFWS initially identified six species in the 26-county Study Area that required evaluation. All six of those species were evaluated in the Tier 1 DEIS. In comments on the Tier 1 DEIS, USFWS requested that FHWA and INDOT prepare a BA for a single Preferred Alternative prior to publication of the FEIS. Subsequently, INDOT identified the Alternative 3C as the Tier 1 Preferred Alternative. FHWA and INDOT then proceeded with Section 7 consultation regarding the impacts of Preferred Alternative 3C.

Of the six species evaluated in the Tier 1 DEIS, USFWS identified three species that may be present in the Action Area for Preferred Alternative 3C. Those three species were the Indiana bat, the bald eagle, and the eastern fanshell mussel. It should be noted that the bald eagle is no longer a listed species but remains protected under other laws.

FHWA and INDOT initiated formal consultation with USFWS on the Indiana bat, the bald eagle,[15] and the eastern fanshell mussel. FHWA and INDOT prepared a Tier 1 BA for all three species identified by USFWS and an addendum to the Tier 1 BA for the Indiana bat. Based on these, USFWS concurred that the project "is not likely to adversely affect" the eastern fanshell mussel. Formal consultation concluded with the issuance of a revised Tier 1 BO by USFWS on August 24, 2006. The revised Tier 1 BO concluded that Preferred Alternative 3C "is not likely to jeopardize the continued existence" of the Indiana bat or the bald eagle nor would it be "likely to destroy or adversely modify [Indiana bat] designated Critical Habitat" (p. 98). It also noted, "Because no Critical Habitat has been designated for the bald eagle, none will be adversely modified by this project" (p. 37). The revised Tier 1 BO also included an incidental take statement for both species. The BO specifies the procedures to be followed for Section 7 consultation in Tier 2.

[15] Delisted effective August 8, 2007.

A Tier 2 BA for Section 5 on Preferred Alternative 8 was prepared for the USFWS in accordance with those procedures identified in the revised Tier 1 BO. It provides the USFWS new and/or more detailed information including a discussion of the expanded SAA and WAA for the Indiana bat, revised direct forest impact data, and a proposed mitigation site plan; and documents compliance with the requirements of the revised Tier 1 BO. In its Section 5 Tier 2 BO issued July 25, 2013, (see **Appendix LL2,** *Redacted Section 5 Tier 2 Biological Opinion*), the USFWS noted that "Section 5 of the I-69 Project, by itself or when considered in conjunction with the larger I-69 project from Evansville to Indianapolis, is not likely to jeopardize the continued existence of the Indiana bat" (pg. 59). USFWS further stated, "Based on our analysis, we do not believe that the proposed action 'would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of the Indiana bat by reducing the reproduction, numbers, or distribution of the Indiana bat (50 CFR 402)'" (pg. 60). (pg. 58). The issuance of the BO concluded formal Section 7 consultation in I-69 Section 5. The Section 5 Tier 2 BO confirmed the Indiana bat may be adversely affected and ensured the level of effect is commensurate with the revised Tier 1 BO and amendments. This verifies the determination that I-69 Section 5 will not jeopardize the continued existence of the Indiana bat.

The Tier 2 biological surveys conducted in Section 5 included generalized pedestrian surveys during project field work, harp and mist netting for Indiana bats, and cave fauna survey. No federally-listed species of flora or fauna were identified within the Section 5 corridor during the generalized survey. A total of five Indiana bats were captured during the 2004 mist net survey. All five captured Indiana bats were fitted with radio-transmitters and tracked after release. Two roost trees were located. None of these roosts were located within the project corridor. Additional mist netting surveys were completed during the summer of 2005. The 2005 surveys focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. Three mist net sites were surveyed for a total of 12 net nights. One lactating female Indiana bat was captured. The lactating female was radiotagged and successfully tracked to four new roost trees. None of these roosts were located within the project corridor. Additional mist netting surveys were completed during the summer of 2012. A total of 12 Indiana bats were captured. Transmitters were attached to five Indiana bats, and all were tracked to at least one specific roost. Two adult males were tracked to a total of three roost trees. A third adult male was tracked to a batbox near a residence. Two pregnant females were successfully tracked to a total of three roosts. None of these roosts were located within the project corridor. A total of three Indiana bat maternity colonies have been identified in Section 5.

Indiana's forests are an important resource for wildlife. The revised Tier 1 BO identifies 303 acres as the estimated direct forest impact for Section 5. Throughout the development of Build Alternatives in Section 5, efforts have been made to avoid or minimize impacts to forests. Due to the fact that expansive forest tracts span the entire Section 5 corridor, avoidance is not possible in many cases. Between 227.66 (Refined Preferred Alternative 8) to 433.16 (Alternative 4) acres of upland forest are potentially affected depending on which alternative is selected.

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. 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 5 in this FEIS, the 3 to 1 ratio has been used. Given this ratio, mitigation for the selected alternative's impact to 227.66 to 433.16 acres of upland forest would be approximately 682.98 to 1,299.48 acres.

Field investigations and review of aerial photography resulted in the identification of four USDA forest classification types in the corridor for Section 5. **Section 5.20**, *Forest Impacts* (**Table 5.20-1**), lists the four types and describes the habitat(s) associated with each. **Section 5.18**, *Wildlife Considerations*, provides more detailed information about habitat types in the corridor. **Chapter 7**, *Mitigation and Commitments*, describes proposed measures to avoid and/or mitigate impacts to forest and wetland habitats, and Indiana bats.

Based on the results of these surveys no direct or indirect impacts on threatened or endangered federally-listed species that would jeopardize the continued existence of such species are anticipated as a result of any of the alternatives in Section 5.

Due to the availability of habitat or their known presence in the Section 5 study area, impacts to the following state listed species are possible: Indiana cave springtail, Packard's groundwater amphipod, Bollman's cave millipede, troglobitic crayfish, Barr's commensual cave ostracod, Mayfield cave beetle, hidden springsnail, eastern box turtle, barn owl, red-shouldered hawk, Henslow's sparrow, evening bat, little brown bat, eastern pipistrelle, silver-haired bat, hoary bat, eastern red bat, northern myotis and the bobcat. INDOT will continue to coordinate with the IDNR to minimize impacts to the eastern box turtle in Section 5. Forest and wetland mitigation for Section 5 is anticipated to benefit both state- and federally-listed species.

Section 5.17 Figure Index

(Figures follow this index.)

Figure 5.17-1: Indiana Bat (*Myotis sodalis*) SE, FE

Figure 5.17-2: Bald Eagle (*Haliaeetus leucocephalis*) SSC

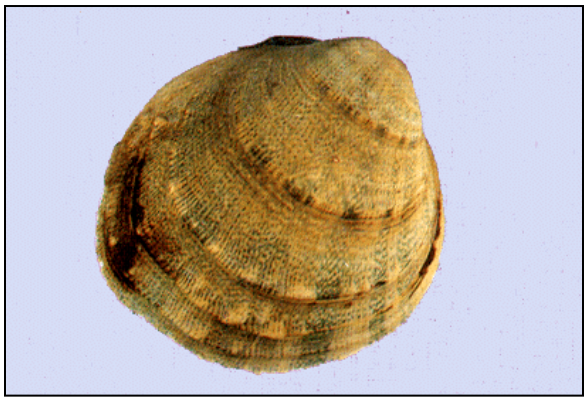

Figure 5.17-3: Eastern Fanshell Mussel (*Cyprogenia stegaria*) SE, FE

Figure 5.17-4: Packard's Groundwater Amphipod (*Crangonyx packardi*) WL

Figure 5.17-5: Crawfish Frog (*Rana areolata circulosa*) SE

Figure 5.17-6: Barn Owl (*Tyto alba*) SE

Figure 5.17-7: Henslow's Sparrow (*Ammodramus henslowii*) SE

Figure 5.17-8: Northern Harrier (*Circus cyaneus*) SE

Figure 5.17-9: Eastern Box Turtle (*Terrapene carolina*) SSC

Figure 5.17-10: Little Brown Bat (left, *Myotis lucifugus*) SSC, and Indiana Bat (right, *Myotis sodalis*) SE, FE

Figure 5.17-11: Bobcat (*Lynx rufus*) SSC

Figure 5.17-12: Least Weasel (*Mustela nivalis*) SSC

Figure 5.17-13: Timber Rattlesnake (*Crotalus horridus*) SE

5.18 Wildlife Considerations

For purposes of this section, Preferred Alternative 8 that was identified in the Draft Environmental Impact Statement (DEIS) will be referred to as "Alternative 8." The Preferred Alternative for the Final Environmental Impact Statement (FEIS) will be referred to as the "Refined Preferred Alternative 8."

Since the publication of the DEIS, the following substantive changes have been made to this section:

- **Section 5.18.3**, *Analysis*, **Section 5.18.4**, *Mitigation*, and **Table 5.18-1** were updated to include impacts and discussion of Refined Preferred Alternative 8.
- **Section 5.18.3.2**, *Upland and Core Forest Wildlife Habitat Impacts*, was updated to included total types of forest impacts (Edge, Total, and Bisection) for forest both within and outside of the 2000-foot corridor.
- **Section 5.18.3.3**, *Streams and Wildlife Crossings*, was updated with current project impacts.
- Additional information regarding wildlife crossings was added to **Section 5.18.4**, *Mitigation*.
- **Figure 5.18-2** was included to depict the potential impacts of the Refined Preferred Alternative 8.

5.18.1 Introduction

Land development and transportation needs are growing quickly and with this growth comes an increase in road density (Evink, 2002). Wildlife populations may be able to tolerate roadway impacts beneath a certain threshold. However, as road density and development increase, animals are pressed into smaller spaces or must cross roads more frequently. Road densities are one of the best measures of the impact upon wildlife (Rudolph, 2000).

To ensure that wildlife and ecosystems remain healthy in the future, some connectivity and permeability must be provided in transportation projects, in what would otherwise become another barrier to wildlife and ecosystem flow. Connectivity between habitats crossed by roadways can be maintained by a range of actions from simply modifying planned culverts to planning extensive span bridges over habitat corridors. Context sensitive designs can help create roads with fewer impacts to wildlife.

Highways are long linear features that have impacts on wildlife and wildlife habitat that are disproportionate to the acreage they occupy. Impacts do not occur only at the time of construction, but also accumulate over time (Jackson, 2000).

Wildlife and vehicle collisions, particularly involving deer, cause significant injury and damage to motorists and property (Evink, 2002). It is estimated that 1.5 million deer-vehicle collisions occur annually throughout the United States. Each year, these accidents cause 29,000 human injuries and at least 200 deaths (Conover et al., 1995). Annual damage to vehicles from these collisions exceeds $1.1 billion (*Ibid.*). There are no data available to estimate the number of accidents and amount of damage caused by drivers trying to avoid animals crossing roadways, or from motorists hitting smaller animals such as skunks, raccoons, opossums, squirrels, and turtles. Appropriate planning and mitigation during construction can go far to prevent long-term degradation of wildlife populations and their associated ecosystems, as well as improve public safety (Jackson, 2000).

Highways impact wildlife directly by their effects on habitat and mortality. They indirectly impact wildlife through increased human exploitation of wildlife and wildlife avoidance of roads. Highways have the potential to affect broad ecological processes in a landscape by fragmenting the wildlife population, restricting wildlife movement, and disrupting gene flow and metapopulation dynamics (Evink, 2002; Jackson, 2000). Metapopulation dynamics are defined as the group dynamics of distinct populations occupying areas of suitable habitat. The impacts of highways on local/regional populations, habitat fragmentation, and metapopulation dynamics are important factors affecting the long-term persistence of wildlife populations. Highways do not affect all wildlife species equally. They may act as filters, stopping some individuals or species while letting others pass through. Over time, this filtering of species based on habitat barriers can have important impacts on species distribution across a landscape (Jackson, 2000).

Maintaining the ecological health of the project area requires that mitigation measures for highway impacts consider all species populations. By designing the highway to include structures that increase landscape permeability and provide habitat "stepping stones" between habitat core areas, the ecological infrastructure of the project area can be maintained. ***Mitigation for impacts on wildlife populations will focus on perpetuating or enhancing connectivity that may exist within the existing SR 37 right of way for all species that are a part of the natural community.*** In doing so, natural processes, wildlife movement, population dynamics, and species distribution in the community will experience less impact from the construction of the interstate.

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Most of the right-of-way used for the Section 5 project already is devoted to transportation use. Accordingly, the impacts to most natural resources in Section 5 will be lessened (on a per-mile basis) in comparison with Sections 1 through 4, which are being constructed on new terrain. The resource impacts described in this section include wildlife habitat impacts both within and outside the existing rights-of-way for SR 37 and associated transportation facilities. The majority of mainline impacts involve impacts to wildlife habitats that were previously impacted by the construction of SR 37. New impacts to wildlife habitat will occur from new interchanges and local access road construction.

The following sections identify the natural communities located within the project corridor, the potential impacts to habitat as a result of the project, actions taken to avoid or minimize impacts and potential mitigation measures where impacts would be unavoidable.

5.18.2 Methodology

A literature investigation and field surveys were conducted to identify existing natural resources and endangered and threatened species located within the Section 5 project corridor. Biological surveys conducted for Section 5 involving bat mist netting, wetlands analysis and streams analysis are described in greater detail in **Section 5.17**, *Threatened and Endangered Species,* and **Section 5.19**, *Water Resources*. The methodology and results of these studies are detailed in the following reports provided in the appendices, as noted:

- *Investigating the Presence of the Indiana Bat During the Summer Maternity Season within the Mitchell Plain Between Bloomington and Martinsville, Indiana* (BHE, 2004), in **Appendix O**, *Indiana Bat Surveys*.

- *Identification of Indiana Bat Roost Trees Along the Proposed Interstate 69 Between Bloomington and Indianapolis, Indiana* (BHE, 2006), in **Appendix O**, *Indiana Bat Surveys*.

- *I-69 Mist Netting Survey for the Indiana Bat (Myotis sodalis) 2012 – Section 5 Bloomington to Martinsville* (ESI, 2012), in **Appendix O**, *Indiana Bat Surveys*.

- *I-69 Evansville to Indianapolis Tier 2 Studies, Cave Reconnaissance for Indiana bat Hibernacula,* (IGS, 2006), in **Appendix O**, *Indiana Bat Surveys.*

- *Surveys for Indiana Bats in Caves in Greene and Monroe Counties, Indiana* (BHE 2005), *Autumn, Winter, and Spring Habitat for the Indiana Bat (Myotis sodalis) Within the Crawford Upland and Mitchell Plain From Scotland to Bloomington, Indiana* (ESI, 2005), in **Appendix O**, *Indiana Bat Surveys.*

- *Autumn 2005 and Winter 2006 Habitat for the Indiana Bat (Myotis sodalis) within the Crawford Upland and Mitchell Plain from Scotland to Bloomington* (ESI, 2006), in **Appendix O**, *Indiana Bat Surveys*.

- *Interstate 69 Evansville to Indianapolis, Tier 2 Studies: Section 5 Final Karst Feature and Groundwater Flow Investigation Report* (Ozark Underground Laboratory, 2013), included as **Appendix Y**, *Final Karst Report (Redacted).*

- *Cave Fauna of the Section 5 Corridor of I-69,* (Lewis, 2005), unpublished report provided as part of **Appendix Y**, *Final Karst Report (Redacted).*

- *Fish, Unionid, and Crayfish Community Characterization of the I-69 Tier 2 Section 5 Corridor, Bloomington to Martinsville, Monroe to Morgan Counties, Indiana* (ESI, 2006), in **Appendix HH**, *Fish, Unionid, and Crayfish Report.*

- *Final Wetland Technical Report,* in **Appendix F**.

- *Final Stream Assessment Report,* in **Appendix M**.

Classification of natural communities within the Section 5 project corridor by habitat type facilitates the evaluation of potential impacts resulting from implementation of the project. The habitat types listed below were developed according to the vegetative characteristics of each community as documented during the field investigations.

Based on the results of the field investigations, 11 natural habitat types were identified within the corridor: (1) old field; (2) early to mid-successional forest; (3) forest fragment (4) mesic floodplain forest; (5) dry-mesic forest; (6) mesic upland forest; (7) emergent wetland; (8) scrub/shrub wetland; (9) forested wetlands; (10) open water; and, (11) sinkhole wetlands. **Figure 5.18-1** shows the locations of all habitat communities identified by the field investigations within the Section 5 corridor. (Unless otherwise noted, figures are located at the end of this section.) The basic characteristics of these habitat types are described below. Active agricultural areas were not included as a habitat type because these areas typically occur within a matrix of other habitat types and provide little habitat when isolated. In addition, depending on management intensity or cultivation method, agricultural habitat may vary substantially from year to year; cultivated agricultural lands are typified by periods of bare soil and harvest as pastures are mowed, hayed, or grazed one or more times during the growing season. The areas in the headings below represent the total amount of the habitat type within the study area, not the area to be impacted.

5.18.2.1 Habitat Types and Associated Species[1]

Old Field — (306.65 Acres)

Habitat: Old field habitat is typically considered land that has been previously managed as active agricultural land including pasture, hay fields, or row cropland such as corn (*Zea mays*) or soybean (*Glycine max*) fields and remains undeveloped. Following managed use, these habitats lay fallow for several years, eventually reverting to an assemblage of various native and naturalized grasses and forbs. Old field is a valuable habitat type for wildlife in the Midwest and this habitat type typically supports a variety of species; however, exact species composition is dependent upon the successional stage of a given old field. Succession is defined as the transition from one biotic community to another in a given habitat (Jackson, 1997). Old field succession typically progresses from meadow to scrub/shrub through a process that occurs over approximately three years. For the purposes of this project, the scrub/shrub old field habitats have been included in the old field habitat type.

Species: As a result of the variety of plant species inhabiting old fields, this habitat type serves as natural food plots for a wide variety of birds, butterflies, and mammals. Common plant species provide an important source of nutritious forage for seed-eating birds such as northern bobwhite (*Colinus virginianus),* mourning dove (*Zenaida macroura*), finches (Fringillidae family), northern cardinal (*Cardinalis cardinalis*), and sparrows (Passeridae and Emberizidae families). Additionally, wild turkey (*Meleagris gallopavo*), eastern meadowlark (*Sturnella magna*), and eastern bluebird (*Sialia sialis*) frequent old fields in search of insects, while rodents

[1] Some of these habitat types are assigned names similar to those used for resources in other chapters. For example, six of the 11 habitat types use "forest" as part of the name. However, not all satisfy the USDA definition of "forest" which is used to define forests in **Section 5.20**, *Forest Impacts*. See explanation with **Table 5.18-1** for more details.

such as voles (*Microtus* sp.), moles (*Scalopus aquaticus*), field mice (Cricetidae family), and groundhogs (*Marmota monax*) feed on the green vegetation and seeds found in old fields. Predators such as barn owl (*Tyto alba*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), common garter snake (*Thamnophis sirtalis*), and racer (*Coluber constrictor*) in turn feed on the rodents. Various flowering plants provide nectar and pollen for butterflies, moths, and bees. The nighthawk (*Chordeiles minor*) and various species of bats feed on moths that emerge from old field habitats.

In addition to foraging in old fields, several species of wildlife use this habitat for nesting and shelter, including the cottontail rabbit (*Sylvilagus floridanus*), badger (*Taxidea taxus*), meadow vole (*Microtus pennsylvanicus*), red fox (*Vulpes vulpes*), American woodcock (*Scolopax minor*), field sparrow (*Spizella pusilla*), northern bobwhite, song sparrow (*Melospiza melodia*), and American goldfinch (*Carduelis tristis*). Butterflies such as the monarch (*Danaus plexippus*) and eastern black swallowtail (*Papilio polyxenes*) also frequent this habitat type. Note that this is only a partial list of species that use old field habitats.

Early to Mid-Successional Forest — (123.72 Acres)

Habitat: Early to mid-successional forest communities resemble a later stage of old field and are sometimes included under the same category. The early to mid-successional forest community typically develops by year three of succession and is characterized by a community consisting of between 10% and 50% woody plants (seedlings or saplings). An area is considered woodland once it consists of greater than 50% saplings. Early to mid-successional forest was not included in the forest impacts in **Section 5.20**, *Forest Impacts*, because it does not meet the U.S. Department of Agriculture (USDA) definition of forest.

Species: The early to mid-successional forest communities provide food sources and shelter for a variety of wildlife. As with all vegetative communities, the specific plant species will determine the species of wildlife present. Representative wildlife found in this habitat type includes northern mockingbird (*Mimus polyglottos*), catbird (*Dumetella carolinensis*), brown thrasher (*Toxostoma rufum*), loggerhead shrike (*Lanius ludovicianus*), Bell's vireo (*Vireo bellii)*, field sparrow, opossum (*Didelphis virginiana)*, cottontail rabbit, northern bobwhite, wild turkey, and most resident and migratory songbirds (IDNR, 2002).

Forest Fragment — (53.86 Acres)

Habitat: While forest fragment is not typically classified as a community type, it represents a unique and valuable wildlife habitat worthy of recognition. Forest fragment primarily consists of fencerows, shrubby ditches and partially forested waterways that lack floodplain, such as small intermittent creeks. This habitat type generally represents those areas between agricultural fields that are too small to be classified as old field or forest. Given the scale and extent of most agricultural landscapes, forest fragments are often the only refuge readily available to wildlife in some areas. Forest fragments were not included in the forest impacts in **Section 5.20**, *Forest Impacts*, because they did not meet the USDA definition of forest.

Species: Wildlife species that commonly utilize forest fragments include cottontail rabbit, Virginia opossum, raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), white-

footed mouse (*Permyscus maniculatus*), gray squirrel (*Sciurus carolinensis*), American robin (*Turdus migratorius*), American tree sparrow (*Spizella arborea*), song sparrow (*Melospiza melodia*), blue jay (*Cyanocitta cristata*), brown-headed cowbird (*Molothrus ater*) and grackle (*Quiscalus quiscula*).

Mesic Floodplain Forests — (167.72 Acres)

Habitat: Mesic floodplain forests occur in lower elevation areas within riparian corridors and often have prolonged periods of standing water. Wetland habitat types sometimes can be found within forested floodplains. This description focuses on the floodplain forest; forested wetlands are discussed later in this section.

Species: Mesic floodplain forests provide valuable habitat for birds, mammals, amphibians, reptiles, and insects. Mesic floodplain forests with dense herbaceous cover provide ideal nesting grounds for waterfowl. Tree snags and cottonwoods (*Populus* spp.) provide food and shelter for many species of songbirds (Sullivan, 1995). Wildlife that typically utilize floodplain forests include Indiana bat (*Myotis sodalis),* bald eagle (*Haliaeetus leucocephalus),* red-tailed hawk (*Buteo jamaicensis),* red-eyed vireo (*Vireo olivaceus),* northern cardinal, catbird, house wren (*Troglodytes aedon),* eastern mole (*Scalopus aquaticus),* raccoon, common muskrat *(Ondatra zibethicus*), white-tailed deer, and turtles (*Chelydra serpentina*, *Kinosternon subrubrum*, *Trachemys scripta*.) (Sullivan 1995).

Dry-Mesic Forest — (1,527.68 Acres)

Habitat: The dry-mesic forest natural community is one of the most common community types in Indiana. In terms of moisture gradient, it is intermediate between dry upland forest and mesic upland forest. It is often found on north and east facing slopes as well as the transition from floodplain forests to dry upland forests in areas with little topographical relief. This forest type is the most prevalent type within Section 5 and is found throughout the 21-mile study corridor.

Species: Because dry-mesic forests often are dominated by oaks (*Quercus* spp.) and hickories (*Carya* spp.), they provide an abundance of food readily utilized by wildlife. This diverse plant system also provides habitat for many different species of birds, mammals, and amphibians such as white-tailed deer, gray squirrels, raccoons, striped skunks (*Mephitis mephitis),* bats (*Myotis* spp., *Epeisicus* fuscus, *Perimyotis subflavus*), eastern box turtles (*Terrapene carolina),* broad-headed skinks (*Eumeces laticeps*), wild turkey, and great horned owl (*Bubo virginianus*).

Mesic Upland Forest — (171.30 Acres)

Habitat: Mesic upland forests are often characterized by a dense canopy and an understory of shade-tolerant species. These areas are typically found on north-facing slopes and level ground with moderately high moisture availability. Within this general community type, species composition varies as a result of topographic variation, soil types, level of anthropogenic disturbance, and available moisture. These forests, where extensive, also assist in regional climate control as the dense canopy shades forested wetlands and associated creeks and ephemeral streams, thus buffering temperature extremes.

Species: These areas may provide food chain support for many different wildlife species. For example, many bird species such as tufted titmouse (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), wood thrush (*Hylocichla mustelina*), blue jay and downy woodpecker (*Picoides pubescens*) utilize these areas and associated wetlands as a source of food, water, nesting material, and shelter. Mammals such as woodchuck (*Marmota monax*), striped skunk, red fox and white-tailed deer also commonly are found in mesic upland forest where they procure food and shelter from this diverse forest community.

Emergent Wetlands — (10.34 Acres)

Habitat: Emergent wetlands support erect, largely herbaceous perennial species and permanent water for most of the growing season during years of normal precipitation levels. These wetlands maintain the same appearance each year unless extreme climatic conditions cause flooding or other extreme local changes. Emergent wetlands traditionally include marsh, meadow, and fens. Dominant herbs in these wetlands include: cattails (*Typha* spp.), bulrush (*Scirpus* spp.), sedges (*Carex* spp.), manna grass (*Glyceria* spp.), smartweeds (*Polygonum* spp.), pickerelweed (*Pontederia* spp.), arrow arum (*Peltandra* spp.) and arrowheads (*Sagittaria* spp.). Emergent wetlands in the project corridor are discussed in greater detail in **Section 5.19**, *Water Resources*.

Species: Emergent wetlands are dominated by herbaceous vegetation. The hydrology can vary from saturated soils near the surface to several inches of inundation, dictating the vegetative community and associated wildlife species usage. The high productivity and availability of food, water, and cover allow wetlands to provide ideal habitat for a diverse array of wildlife. Emergent wetlands harbor resident and migratory waterfowl including geese, ducks, herons, and other birds. Depending on hydrology levels, emergent wetlands may also provide habitat for muskrat, snakes, frogs, salamanders, turtles, various beneficial insects and their larvae, dragonflies (Order Odonata), damselflies (Order Odonata), and water boatmen (Corixidae family).

Scrub/Shrub Wetlands — (3.41 Acres)

Habitat: Scrub/shrub wetlands support largely woody species less than 20 feet in height. All hydrological regimes are included except sub-tidal. Vegetation includes true shrub species, but also young trees and trees and shrubs that are stunted because of environmental conditions. Scrub/shrub wetlands within Section 5 are broad–leaved, deciduous communities consisting of species such as: buttonbush, willows, and swamp rose.

Species: Scrub/shrub wetlands often occur in areas that are maintained by man and remain in an early successional state. This early successional state allows for a dense layer of shrubs, herbaceous vegetation, and vines to form. This thick layer of vegetation provides cover and habitat for a variety of species. In addition, depending on the hydrologic regime, habitat for aquatic species could also be provided. Representative wildlife would include great blue heron (*Ardea herodias*), green heron (*Butorides striatus*), swamp sparrow (*Melospiza georgiana*), eastern cottontail rabbit, muskrat, and various species of amphibians, reptiles, and insects.

Forested Wetlands — (37.52 Acres)

Habitat: Forested wetlands support largely woody species greater than 20 feet in height. They include various hydrological regimes and various layers of vegetation including canopy trees,

subcanopy trees, shrubs, and a ground layer of herbaceous vegetation. Forested wetlands traditionally include bottomland hardwood and swamp communities. Forested wetlands in the project corridor are discussed in greater detail in **Section 5.19**, *Water Resources*.

Species: Many forested wetlands are located within larger tracts of forests (including the various types described earlier in this section); therefore, wildlife in forested areas also may be found in forested wetlands. Often, forested wetlands are inundated seasonally, which provides an ideal habitat for emergence of spring aquatic life. Representative wildlife dependent upon forested wetlands include waterfowl and songbirds such as wood ducks (*Aix sponsa)*, great blue heron, green heron, swamp sparrow, and other wildlife such as turtles, salamanders, frogs, snakes, and mammals.

Open Water — (29.68 Acres)

Habitat: Open water habitat types in the Section 5 corridor consist of lakes and ponds. Open water habitat is described in **Section 5.19**, *Water Resources*.

Species: Open water habitat can provide breeding, foraging, and resting habitat for a variety of wildlife species including amphibians, birds, mammals, fish, and insects. Although natural open water habitats provide spawning sites, nursery areas, feeding sites, and cover for various species of fish, many man-made features (e.g. stock and detention ponds, flooded gravel pits) may not provide suitable habitat for certain species of fish or other aquatic species.

Sinkhole Wetlands — (2.23 Acres)

Habitat: A product of karst topography, sinkhole wetlands develop in sinkholes associated with void bedrock strata from the dissolution of limestone. Because they are largely impermeable, many sinkhole wetlands store rainwater long into the drier seasons. Sinkhole wetlands are described in greater detail in **Section 4.3.3**, *Ecosystems.*

Species: Sinkhole wetlands are similar to open water habitats, and provide breeding, foraging, and resting habitat for amphibians, birds, and mammals. Although natural open water habitats provide spawning sites, nursery areas, feeding sites, and cover for various species of fish, many man-made features (e.g. stock and detention ponds, flooded gravel pits) do not provide suitable habitat for certain species of fish or other aquatic species.

5.18.3 Analysis

Section 5 of I-69 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Existing SR 37 right-of-way used for the Section 5 project is already devoted to transportation use. Therefore, species within and in the vicinity of the study corridor are anticipated to have acclimated to the existing condition of the project area and a landscape change that would eliminate habitats usable by these species is not anticipated.

The resource impacts in this section include wildlife habitat impacts both within and outside the existing rights-of-way for SR 37 and other associated transportation facilities. The majority of mainline impacts occurred during the construction of existing SR 37. Conversion of this facility to I-69 involves impacts to wildlife habitats, but they will be minimal in comparison with

impacts caused by the original construction of SR 37. New impacts to wildlife habitat would occur from new interchanges, overpasses, and local access road construction.

Where possible, the alternative alignments were located to minimize impacts on wildlife habitat areas. Mitigation for impacts on wildlife populations will focus on perpetuating or enhancing connectivity that may exist within the existing SR 37 right-of-way for all species that are a part of the natural community.

Avoidance of wetland habitat types was prioritized during the development and screening of the alternatives. The Section 5 corridor crosses through extensive forested tracts along the existing SR 37 alignment, therefore impacts to forest habitat types are unavoidable.

The following paragraphs summarize the potential impacts the Section 5 alternatives will have on upland forest habitat, wetland habitat, old field habitat, ponds, and streams. **Table 5.18-1** identifies the impact to each habitat community within the right-of-way, for each Section 5 alternative. **Figures 5.18-1** and **5.18-2**, located at the end of this section, depict the impacts to wildlife habitat for Alternatives 4 through 8 and Refined Preferred Alternative 8, respectively. More detailed descriptions of impacts to forests, wetlands, and streams are located in **Section 5.20**, *Forest Impacts*, and **Section 5.19**, *Water Resources.* There may be slight discrepancies in some totals due to rounding.

Table 5.18-1: Potential Wildlife Habitat Impacts, by Alternative

Habitat Type	Total Acres in Corridor	Build Alternatives					
		4	5	6	7	8	Refined Preferred Alternative 8
Dry-Mesic Upland Forest (acres)	1,527.68	367.77	332.35	203.78	199.57	209.80	203.45
Forest Fragment (acres)	53.86	32.64	32.43	25.91	25.87	25.99	25.37
Mesic Floodplain Forest (acres)	167.72	36.31	27.86	17.54	21.06	20.29	15.75
Mesic Upland Forest (acres)	171.30	29.08	35.46	17.29	12.31	19.23	8.46
Early to Mid Successional Forest (acres)	123.72	24.39	20.03	12.27	13.37	13.78	13.21
Old Field (acres)	306.65	59.68	54.57	30.77	22.72	31.25	30.24
Upland Habitat Subtotal (acres)	2,350.93	549.87	502.70	307.56	294.90	320.34	296.48
Open Water (PUB) (acres)	29.68	1.40	4.18	5.38	2.20	2.50	0.02
Wetlands (PAB, PEM, PSS, and PFO in acres)	53.51	11.70	16.06	10.96	5.18	9.96	3.43
Total Natural Habitat (acres)	2,434.12	562.97	522.94	323.90	302.28	332.80	299.93
Natural Habitat Acreage Percent of Corridor	100%	23.13%	21.48%	13.31%	12.42%	13.67%	12.32%

Table 5.18-1: Potential Wildlife Habitat Impacts, by Alternative

Habitat Type	Total Acres in Corridor	Build Alternatives					
		4	5	6	7	8	Refined Preferred Alternative 8
Total Natural Habitat Within Existing SR 37 Right-of-Way (acres)		156.74	157.69	159.26	158.69	159.24	158.50
Natural Habitat Acreage Percent Outside Existing SR 37 Right-of-Way		72.16%	69.85%	50.83%	47.50%	52.15%	47.15%
Streams (LF) in ROW		**106,445**	**103,165**	**85,192**	**83,291**	**86,404**	**80,582**
Ephemeral		87,432	83,795	68,414	66,804	69,506	65,692
Intermittent		14,984	14,816	12,915	12,636	13,067	11,862
Perennial		4,029	4,554	3,863	3,851	3,831	3,028
Streams (LF) in ROW (Structure)		**106,445**	**103,165**	**85,192**	**83,291**	**86,404**	**80,582**
Bridge		838	832	890	848	857	815
Concrete Gutter		22,529	22,509	22,791	22,843	22,891	22,891
Culvert		19,128	19,126	18,566	18,398	18,598	18,584
Dump Rock Gutter		1,975	2,083	1,887	1,954	1,996	1,949
Natural		51,002	46,804	29,506	28,010	30,519	25,574
Roadside Ditch		10,973	11,811	11,552	11,238	11,543	10,769
Percent Natural Channel		47.91%	45.37%	34.63%	33.63%	35.32%	31.74%

Notes:

*Dry-Mesic Upland Forest, Mesic Floodplain Forest, and Mesic Upland Forest are included in the forest impacts in **Section 5.20**, Forest Impacts. Mid Successional Forest and Forest Fragments are not included in the forest impacts in **Section 5.20**, Forest Impacts, because they do not meet the USDA definition of forest. Comparable forest numbers reported in this section may differ slightly from those reported in **Section 5.20,** Forest Impacts, due to rounding.*

In some areas, the Section 5 Alternatives are outside of the Tier 1 corridor. The percentages in this table include impacts outside the corridor.

LF = Linear Feet

5.18.3.1 Impacts by Habitat Type and Alternative

Alternative 4 would impact a total of 562.97 acres of the following habitat types: old field (59.68 acres), mid-successional forest (24.39 acres), forest fragment (32.64 acres), dry-mesic upland forest (367.77 acres), mesic floodplain forest (36.31 acres), mesic upland forest (29.08 acres), forested/scrub-shrub/emergent wetlands (11.70 acres), and open water ponds (1.40 acres). A total of 106,445 linear feet of perennial, intermittent, and ephemeral streams are within the Alternative 4 right-of-way, with 47.91% consisting of natural channel. For Alternative 4, there is a total of 156.74 acres of natural habitat located within the existing SR 37 right-of-way that would be impacted; the majority of this is dry-mesic upland forest (113.90 acres).

Alternative 5 would impact a total of 522.94 acres of the following habitat types: old field (54.57 acres), mid-successional forest (20.03 acres), forest fragment (32.43 acres), dry-mesic upland forest (332.35 acres), mesic floodplain forest (27.86 acres), mesic upland forest (35.46

acres), forested/scrub-shrub/emergent wetlands (16.06 acres), and open water ponds (4.18 acres). A total of 103,165 linear feet of perennial, intermittent, and ephemeral streams are within the Alternative 5 right-of-way, with 45.37% consisting of natural channel. For Alternative 5, there is a total of 157.69 acres of natural habitat located within the existing SR 37 right-of-way that would be impacted; the majority of this is dry-mesic upland forest (114.16 acres).

Alternative 6 would impact a total of 323.9 acres of the following habitat types: old field (30.77 acres), mid-successional forest (12.27 acres), forest fragment (25.91 acres), dry-mesic upland forest (203.78 acres), mesic floodplain forest (17.54 acres), mesic upland forest (17.29 acres), forested/scrub-shrub/emergent wetlands (10.96 acres), and open water ponds (5.38 acres). A total of 85,192 linear feet of perennial, intermittent, and ephemeral streams are within the Alternative 6 right-of-way, with 34.63% consisting of natural channel. For Alternative 6, there is a total of 159.26 acres of natural habitat located within the existing SR 37 right-of-way that would be impacted; the majority of this is dry-mesic upland forest (116.42 acres).

Alternative 7 would impact a total of 309.53 acres of the following habitat types: old field (22.72 acres), mid-successional forest (13.37 acres), forest fragment (25.87 acres), dry-mesic upland forest (199.57 acres), mesic floodplain forest (21.06 acres), and mesic upland forest (12.31 acres), forested/scrub-shrub/emergent wetlands (5.18 acres), and open water ponds (2.20 acres). A total of 83,291 linear feet of perennial, intermittent, and ephemeral streams are within the Alternative 7 right-of-way, with 33.63% consisting of natural channel. For Alternative 7, there is a total of 158.69 acres of natural habitat located within the existing SR 37 right-of-way that would be impacted by Alternative 7; the majority of this is dry-mesic upland forest (116.42 acres).

Alternative 8 would impact a total of 332.80 acres of the following habitat types: old field (31.25 acres), mid-successional forest (13.78 acres), forest fragment (25.99 acres), dry-mesic upland forest (209.80 acres), mesic floodplain forest (20.29 acres), mesic upland forest (19.23 acres), forested/scrub-shrub/emergent wetlands (9.96 acres), and open water ponds (2.50 acres). A total of 86,404 linear feet of perennial, intermittent, and ephemeral streams are within the Alternative 8 right-of-way, with 35.32% consisting of natural channel. For Alternative 8, there is a total of 159.24 acres of natural habitat within the existing SR 37 right-of-way would be impacted; the majority of this is dry-mesic upland forest (116.40 acres).

Refined Preferred Alternative 8 would impact a total of 307.18 acres of the following habitat types: old field (30.24 acres), mid-successional forest (13.21 acres), forest fragment (25.37 acres), dry-mesic upland forest (203.45 acres), mesic floodplain forest (15.75 acres), mesic upland forest (8.46 acres), forested/scrub-shrub/emergent wetlands (3.43 acres), and open water ponds (0.02 acre). A total of 80,582 linear feet of perennial, intermittent, and ephemeral streams are within the Refined Preferred Alternative 8 right-of-way, with 31.74% consisting of natural channel. Of this total, 68,835 linear feet are located within the existing SR 37 right-of-way, and 11,747 linear feet are located within the additional right-of-way needed for Refined Preferred Alternative 8. For Refined Preferred Alternative 8, there is a total of 158.50 acres of natural habitat located within the existing SR 37 right-of-way that would be impacted; the majority of this is dry-mesic upland forest (116.33 acres).

The Section 5 alternatives would impact between 307.18 and 562.97 acres of wildlife habitat. Alternatives 4 and 5 would have the largest areas of wildlife habitat impacts (562.97 and 522.94 acres respectively), while Alternatives 6, 7, 8, and Refined Preferred Alternative 8 are similar in the areas of impact ranging from 307.18 acres (Refined Preferred Alternative 8) to 332.8 acres (Alternative 8).

5.18.3.2 Upland and Core Forest Wildlife Habitat Impacts

Fragmentation of core forest habitat can affect migratory birds in a number of ways. Some birds require large blocks of forest to successfully nest and fledge their young. Nests deep in a forest tract are also often less susceptible to cowbird parasitism and predation by edge species such as raccoons. Fragmentation also can affect bird use by separating habitat blocks so they no longer function as one habitat unit. Alternative 4 would impact approximately 433.16 acres of upland forest habitat (of which 87.23 acres are core forest habitat[2]). Alternative 5 would impact approximately 395.67 acres of upland forest habitat (76.82 acres of core forest habitat). Alternative 6 would impact approximately 238.61 acres of upland forest habitat (45.88 acres of core forest habitat). Alternative 7 would impact approximately 232.94 acres of upland forest habitat (44.52 acres of core forest habitat). Alternative 8 would impact approximately 249.32 acres of upland forest habitat (44.86 acres of core forest habitat). Refined Preferred Alternative 8 would impact approximately 227.66 acres of upland forest habitat (41.84 acres of core forest habitat).

Increases in edge habitat can promote unwanted forest conditions for some wildlife species, particularly birds that nest in the interior of large forest blocks. All of the alternatives attempt to minimize forest fragmentation by utilizing existing SR 37. Edge habitat is already present to a significant degree due to the existing highway. For each alternative, impacts to forest tracts were assessed and characterized by type, i.e., whether a tract would be impacted on its edge, bisected (fragmented), or totally impacted. In comparison, the alternatives are similar regarding the characterization of edge impacts. Alternative 4 would cause 104 edge impacts, 13 bisection impacts, and 15 total impacts to forest tracts. Alternative 5 would cause 102 edge impacts, 10 bisection impacts, and 18 total impacts to forest tracts. Alternative 6 would cause 104 edge impacts, one bisection impact, and 13 total impacts to forest tracts. Alternative 7 would cause 97 edge impacts, six bisection impacts, and 11 total impacts to forest tracts. Alternative 8 would cause 95 edge impacts, 3 bisection impacts, and 14 total impacts to forest tracts. Refined Preferred Alternative 8 would cause 95 edge impacts, 3 bisection impacts, and 9 total impacts to forest tracts. Edge impacts and total impacts are similar between the studied alternatives ranging from 95 (Refined Preferred Alternative 8) to 104 (Alternatives 4, 5, and 6), and from 9 (Refined Preferred Alternative 8) to 18 (Alternative 5), respectively. Bisection impacts range from 1 (Alternative 6) to 13 (Alternative 4). Alternatives 4 and 5 would have the largest amount of bisection impacts (13 and 10, respectively). Alternative 7 would have six bisection impacts. Alternatives 8 and Refined Preferred Alternative 8 would have the same amount of bisection impacts (three), while Alternative 6 would have the least amount of bisection impact at one.

[2] Core habitat is the interior portion of any particular habitat. Core forest is generally accepted to be the portion of the forest that is 100 meters (328 feet) from the edge (Temple, 1986).

Refined Preferred Alternative 8 would have the smallest total natural habitat impacts, wetland impacts, stream impacts, upland forest impacts, and core forest impacts of all the Section 5 alternatives.

5.18.3.3 Streams and Wildlife Crossings

Griffy Creek, Beanblossom Creek and overflow, Bryant Creek, Little Indian Creek, and Jordan Creek are the perennial streams in the Section 5 corridor identified as being potentially impacted by the alternatives.[3] These crossings are on the same, or essentially the same alignments as SR 37. Therefore, each would have the same potential for wildlife impacts at these crossings, where the creeks have been previously modified and impacted (i.e., captured in ditches, concrete channels, pipes, culverts, and/or bridges). Impacts from alterations to stream segments within existing SR 37 structures that result from the I-69 conversion are considered minor. In addition, many of the remaining impacts are from extensions to these existing structures (i.e., lengthening of existing culverts, widening of existing bridges, re-routing of concrete channels). Individual crossings are described further in **Section 5.19**, *Water Resources*.

Griffy Creek, South Crossing (Monroe County, northwest of Bayles Road and Walnut Street Intersection): This section of Griffy Creek is located approximately 600 feet northwest of the intersection between Bayles Road and Walnut Street, and approximately 3,400 feet southeast of existing SR 37. This portion of Griffy Creek is only crossed by Alternative 4 to allow SR 37 Business to tie into I-69, since an interchange near the existing tie in to SR 37 is not provided by Alternative 4. This crossing location minimizes floodplain impacts, by crossing the floodplain as perpendicular as practicable, as dictated by design standards. Impacts would occur to riparian habitat since this crossing is on new alignment; however, the existing riparian zone is currently highly fragmented due to existing agriculture along the stream. No wetlands were identified at the location of this crossing.

Griffy Creek, North Crossing (Monroe County, south of Walnut Street): All of the alternative mainlines cross Griffy Creek on common alignment approximately 2,300 feet south of the existing Walnut Street interchange overpass on SR 37. This crossing location minimizes impacts to the Griffy Creek floodplain by crossing where it is narrow, in a perpendicular orientation, and by utilizing the existing crossing alignment of SR 37. Since the crossing would occur on the existing SR 37 alignment, impacts to riparian habitat are anticipated to be minimal at this crossing due to existing fragmentation. There are no other crossings other than the mainline at this location and no wetlands were identified.

Beanblossom Creek, (Monroe County, south of Walnut Street): All of the alternative mainlines would cross Beanblossom Creek on a common alignment approximately 1,100 feet south of the existing Walnut Street overpass on SR 37. This crossing location minimizes impacts to the Beanblossom Creek floodplain by crossing where it is narrow, in a perpendicular orientation, and by utilizing the existing crossing alignment of SR 37. Since the crossing would occur on the existing SR 37 alignment, impacts to riparian habitat are anticipated to be minimal

[3] In addition, Buckner Branch and an unnamed tributary to Bryant Creek were designated as perennial streams based on the QHEI methodology, even though they are shown intermittent streams on USGS mapping For further information regarding the QHEI methodology, refer to **Section 5.19.2.3**, *Analysis – Streams*.

at this crossing due to existing fragmentation. However, all of the alternatives would impact an oxbow wetland on the south side of Beanblossom Creek. Walnut Street currently has an interchange with SR 37 north of the existing crossing.

The alternatives include different options to address the existing interchange. Alternative 4 would realign the Walnut Street overpass and would not provide an interchange with I-69, which results in the need for only crossing of Beanblossom Creek on the mainline of I-69. Alternative 5 and Alternative 8 would provide a new full interchange with Walnut Street, which would result in an additional crossing associated with the realignment of Walnut Street approaching the proposed interchange. Alternative 6 would not provide a new interchange with Walnut Street, but the realignment of Walnut Street approaching a new overpass and access road improvements on the west side of SR 37 would result in a total of two new crossings over Beanblossom Creek. Alternative 7 would use the existing partial interchange at Walnut Street, and would provide access roads on both sides of the mainline to maintain connectivity in the area, resulting in two additional crossings of Beanblossom Creek. Refined Preferred Alternative 8 would also utilize the existing partial interchange at this location, but would not have a local access road connection on the east side of the mainline, resulting in only one additional crossing. Further description of impacts to wetlands, streams, riparian areas, and floodplains can be found in **Section 5.19**, *Water Resources*.

Beanblossom Creek Overflow, (Monroe County, south of Walnut Street): All of the alternative mainlines would cross an overflow wetland of Beanblossom Creek on a common alignment approximately 1,850 feet north of the existing Walnut Street interchange overpass on SR 37. This crossing location minimizes impacts to the floodplain by crossing in a perpendicular orientation, and by utilizing the exiting crossing alignment of SR 37. In addition to the mainline crossings, Alternatives 4, 5, 6, 7, and 8 would impact this overflow wetland with an access road on the east side of I-69. Unlike the other alternatives, Refined Preferred Alternative 8 would not have an eastern local access road between Walnut Street and Connaught Road, and thus, one less crossing at this location, which would minimize the impacts to the Beanblossom Creek floodplain on the eastern side of the mainline. Alternative 6 also includes a local access road on the west side of I-69, and an additional crossing at this location. Since the mainline crossing occurs on the existing SR 37 alignment for all alternatives with access roads being located adjacent to mainlines, impacts to riparian habitat are anticipated to be minimal at this crossing due to existing fragmentation. Wetland impacts are minimized in all of the alternatives by crossing the wetlands in a perpendicular manner and by providing a hydrologic connection under the bridge to wetlands on opposite sides of the roadway alignment.

Bryant Creek, Monroe County (north of Bryant's Creek Road): All of the alternative mainlines cross Bryant Creek on common alignment approximately 600 feet north of the intersection of SR 37 and Bryant's Creek Road. This crossing location minimizes impacts to the Bryant Creek floodplain by crossing in a perpendicular orientation, and by utilizing the existing crossing alignment of SR 37. Since the crossing occurs on the existing SR 37 alignment, impacts to riparian habitat are anticipated to be minimal at this crossing due to existing fragmentation. In addition to the mainline crossing under all alternatives, Alternative 7 includes an overpass for Bryant's Creek Road, which would cross Bryant Creek approximately 550 feet east from existing SR 37. This crossing would be on new alignment and would impact forested riparian habitat; however this habitat is already fragmented by agriculture and Bryant's Creek Road. The

crossing would also impact the floodplain and wetlands, but the impacts would be minimized because the crossing is perpendicular in nature. Further description of these impacts can be found in **Section 5.19**, *Water Resources*.

Little Indian Creek, Morgan County (south of Godsey Road/Liberty Church Road): All of the alternative mainlines would cross Little Indian Creek on a common alignment approximately 1,400 feet south of the existing intersection of Godsey Road/Liberty Church Road and SR 37. This crossing location minimizes impacts to the Little Indian Creek floodplain by utilizing the existing crossing alignment of SR 37. Since the crossing would occur on the existing SR 37 alignment, impacts to riparian habitat are anticipated to be minimal due to existing fragmentation from agriculture. No wetlands were identified at this crossing, so no wetland impacts would occur. All of the alternatives include different options to address the existing intersection of Godsey Road/Liberty Church Road. Alternative 4 would provide an overpass and local access roads, which would result in two additional crossings for access roads north of the mainline crossing. These crossings would result in additional floodplain impacts. Riparian impacts would be minimal at these crossings due to the existing amount of fragmentation due to agriculture. Alternatives 5, 6, 7, 8, and Refined Preferred Alternative 8 would all provide a new interchange at the Godsey Road/Liberty Church Road intersection, which would result in additional stream crossings. Alternatives 5, 6, 7, and 8 would include two additional crossings of Little Indian Creek (Godsey Road/Liberty Church Road and local access road on the west side). Both of these alternatives would impact floodplains and limited riparian habitat. There are no wetlands at these crossings. Alternative 5 would also include one additional crossing on the east side of the mainline. This crossing would also result in floodplain impacts and limited riparian habitat. No wetlands were identified at this crossing. Refined Preferred Alternative 8 includes an interchange location farther north on the mainline than the other alternatives that would result in one additional crossing, immediately adjacent to the mainline SR 37 bridge on the west side for a local access road.

Jordan Creek, Morgan County (north of Godsey Road/Liberty Church Road): All of the alternative mainlines would cross Jordan Creek on a common alignment approximately 1,800 feet north of the existing intersection of Godsey Road/Liberty Church Road and SR 37. Alternatives 4, 6, 7, and 8 would have two additional crossings for local access roads on either side of the mainline. Alternative 5 would have two additional crossings for local access roads on either side of the mainline as well as two other crossings for interchange ramps. The Refined Preferred Alternative 8 would have two additional crossings of Jordan Creek east and west of SR 37 for local access roads. However, the new interchange ramps would be included as part of the mainline bridges for the Refined Preferred Alternative 8, thereby reducing the number of crossings needed for the interchange. Wildlife impacts at this crossing are anticipated to be minimal; there are no mapped floodplains, no mapped wetlands, and no riparian habitat present.

Table 5.18-1 presents wildlife habitat impacts for each alternative. Each of the alternatives will directly impact forested and wetland areas that provide wildlife habitat. These impacts may be addressed by recognizing the long-term effects of the highway, documenting the highway effects on wildlife populations, using landscape analyses to identify “connectivity zones” for wildlife and their habitat, working with transportation engineers to solve technical problems, and designing good monitoring studies to evaluate mitigation techniques.

Initial measures to avoid sensitive biological communities were taken when the corridor was selected in Tier 1 (see the Tier 1 FEIS, Section 5.23-4, *Natural Environmentally Sensitive Areas* [p. 5-240ff] and the Tier 1 FEIS, Table 5.23-2, *Natural Environmentally Sensitive Areas and Efforts to Avoid, Minimize or Mitigate Impacts* [p. 5-249ff]). One notable effort to reduce impacts to wildlife/wildlife habitat was the decision made during the development and screening of alternatives to prioritize the avoidance/minimization of wetland habitats. In the locations of wetland crossings, direct impacts to wetlands and floodplain functions and values will be minimized to the extent practicable by using existing highway alignments.

The modification of Alternative 8 to the current Refined Preferred Alternative 8 has resulted in a minimization of impacts to wildlife habitat. Refined Preferred Alternative 8 has 25.62 less acres of natural habitat impact, 6.53 less acres of wetland impacts, and 5,822 less linear feet of stream impact when compared to DEIS Preferred Alternative 8.

5.18.4 Mitigation

Initial measures to avoid sensitive biological communities were taken when the corridor was selected in Tier 1. To address the remaining potential impacts of the project on wildlife, mitigation measures have been developed, including: providing financial and technical assistance to support land use planning efforts by local governments to facilitate protection of sensitive areas from development; mitigation of wetland impacts at appropriate ratios pursuant to INDOT's Wetlands Memorandum of Understanding (MOU); mitigation of upland forest impacts at a 3 to 1 ratio (with a goal of 1 to 1 replacement and 2 to 1 preservation for each acre impacted); compliance with the terms and conditions of the United States Fish and Wildlife Service (USFWS) revised Tier 1 Biological Opinion (BO) for the project, issued August 24, 2006 (including the Amendment issued May 25, 2011 and Amendment 2 issued July 24, 2013); and adoption of measures to protect wildlife, such as incorporating wildlife crossings in the design. Mitigation for impacts to wetlands and forests are described in detail in **Section 5.19**, *Water Resources*; **Section 5.20**, *Forest Impacts*; and **Chapter 7**, *Mitigation and Commitments.* The revised Tier 1 BO is provided in **Appendix BB**, *Revised Tier 1 BO*.

In a letter dated September 28, 2006, the IDNR made several recommendations related to wildlife crossings for Section 4 of I-69. Although this letter was for another I-69 section, the general guidelines for wildlife crossings remain applicable to Section 5. The IDNR recommended crossings where habitat is present on both sides of the road, and in lowland and upland locations. The IDNR recommended that any new bridges and redesigned bridges in areas of high wildlife use to have design specifications that provide for wildlife habitat connectivity including an adequate space under bridges with dry land unarmored with riprap with minimum dimensions (8 feet tall by 24 feet wide) to allow for wildlife passage. In addition, the IDNR recommended deer exclusion fencing along the roadway. The IDNR recommended that bridges and culverts should extend beyond top of bank, or contain an above-water ledge for wildlife use, and culverts should consist of a natural bottom.

According to the IDNR, areas with heavy white-tailed deer traffic should provide bridges or culverts large enough to pass a male deer with antlers. Smaller culverts can be used for passage of smaller animals (e.g. small mammals, reptiles and amphibians). The IDNR also recommended other appropriate mitigation measures be implemented where the highway crosses significant

habitat area, including placing any lights on the shortest poles possible to limit the spread of light and shielding the light so it only shines on the highway and not up or out from the road. Non-diffuse lighting will be used when possible. Details of lighting will be identified during the final design.

Based on field reconnaissance, habitat and landscape connectivity, and sizes of existing bridges (as many bridges are anticipated to be rehabilitated in place), Section 5 includes six wildlife crossings, which are listed below. See **Appendix II**, *Wildlife Corridors Information*, for maps, photographs, and additional information on these crossings.

1. Griffy Creek – The existing northbound bridge is 224.4 feet long and 23 feet high. The existing southbound bridge is 280 feet long and 23 feet high. For Alternative 6, both bridges are proposed to be rehabilitated in place. For Alternatives 7, 8 (Option B)[4] and Refined Preferred Alternative 8, the bridges would be rehabilitated and a new fifth span will be added to the northbound structure that would match the length of the southbound structure, providing the same crossing size as the existing structure. Under Alternative 8 (Option A) the structures would be replaced with new 235-foot three-span structures centered about the stream. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. Alternatives 4 and 5 include construction of new bridges at Griffy Creek. Structures associated with Alternatives 4 and 5 were sized to provide expanded crossing dimensions.

2. Beanblossom Creek (southern crossing) – Both the existing northbound and southbound bridges are 292.5 feet long and 23 feet high. For Alternatives 6, 7, 8 (Option B) and Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place. Under Alternative 8 (Option A) the structures would be replaced with new three-span structures approximately 295 feet long. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. Alternatives 4 and 5 include construction of new bridges at Beanblossom Creek. Structures associated with Alternatives 4 and 5 were sized to provide expanded crossing dimensions.

3. Beanblossom Creek Overflow (northern crossing) - Both existing northbound and southbound bridges are 153 feet long and 15.5 feet high. With Alternatives 6, 7, 8 (Option B) and Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. Under Alternative 8 (Option A) the structures would be replaced with new three-span structures approximately 295 feet long. Alternatives 4 and 5 include construction of new bridges at Beanblossom Creek Overflow. Structures associated with Alternatives 4, 5 and 8 (Option A) were sized to provide expanded crossing dimensions.

4. Bryant Creek - The existing northbound bridge is 142.4 feet long and 13.5 feet high. The existing southbound bridge is 142.5 feet long and 13.5 feet high. With Alternatives 6, 7, 8

[4] Alternative 8 has two options at Walnut Street: either maintain the existing partial interchange (Option B), or replace the interchange with a new fully-directional interchange (Option A). Further discussion about these options can be found in **Chapter 6**, *Comparison of Alternatives*.

(Option A and Option B), and Refined Preferred Alternative 8, both bridges are proposed to be rehabilitated in place. Wildlife that currently crosses SR 37 will continue to use these existing structures to cross under I-69. Alternatives 4 and 5 include construction of new bridges at Bryant Creek Overflow. Structures associated with Alternatives 4 and 5 were sized to provide expanded crossing dimensions.

5. Little Indian Creek - Both the existing northbound and southbound bridges are 75 feet long and 20 feet high. The bridges are proposed for replacement at their current location in all the preliminary alternatives. The Liberty Church interchange was shifted to the north to reduce floodplain and stream impacts. Refined Preferred Alternative 8 proposes rehabilitation of the existing structures. The proposed west local access road bridge is directly adjacent to the rehabilitated structures and will convey the same opening as exists for the I-69 southbound bridge (a 6-foot by 6-foot allowance on both ends of the structure). There is little surrounding habitat at this location, but a narrow riparian corridor is present. Wildlife that currently crosses SR 37 will continue to use these existing passages to cross under I-69.

6. Jordan Creek - Both the existing northbound and southbound bridges are 40 feet long and 11.25 feet high. The bridges are proposed for replacement at their current location in all alternatives. The proposed dimensions for the Refined Preferred Alternative 8 bridges are 58 feet long by approximately 9.5 feet high. The proposed ramp and access road bridges over Jordan Creek will at a minimum provide the same bridge opening as the proposed mainline I-69 structures. There is little surrounding habitat at this location; however, wildlife that currently crosses SR 37 will continue to use these existing passages to cross under I-69.

As currently proposed in all alternatives, the south side of Griffy Creek will provide a wildlife crossing in excess of the minimum dimensions required to allow larger mammals (i.e. male deer with antlers) to pass (at least 8 feet high and 24 feet wide) beneath the highway. The other five structures are currently sized to provide ambient light and also provide wildlife crossing opportunities for all but the largest mammals. The remainder of the Section 5 crossings will also provide additional crossing opportunities for smaller wildlife including small mammals, amphibians and reptiles, using smaller culverts and pipes.

In addition to these six crossings, there are 15 crossing locations that will provide an opportunity to enhance existing structures. While these crossings would not meet the 8 feet high and 24 feet wide standard, a shelf width would be provided that would allow for wildlife to cross underneath I-69.

Since the alternatives would upgrade the existing alignment of SR 37, existing crossings would be upgraded. There would be no net loss of crossings along the alignment as a whole, and the landscape permeability (the ease with which wildlife can cross I-69) is not anticipated to be less than the existing condition. With the proposed crossing improvements, it is anticipated that landscape permeability would increase with the construction of I-69. In addition, species are anticipated to have acclimated to the existing condition of the project area. Further there will not be a significant loss of habitat or crossings utilized by wildlife.

During the final design phase, consideration may be given to incorporating vegetation plantings 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 final design. Vegetation plantings and fencing will be assessed in regards to the habitat remaining after final design, the final size of structures, topography, fill material used in the roadway, and cost. Natural bottoms for the box culverts will be used for these crossings, where feasible, to further promote maintenance of aquatic communities and wildlife movement.

5.18.5 Summary

North of Bloomington, Section 5 is predominately forested with numerous wildlife habitat areas, including the Morgan-Monroe State Forest. Alternative alignments have been located to minimize impacts to wildlife habitats where possible. **Table 5.18-1** provides impacts to the habitat types within the Section 5 corridor for each alternative. Mitigation for impacts on wildlife populations will focus on perpetuating or enhancing connectivity that may exist within the existing SR 37 corridor for all species that are a part of the natural community. Mitigation measures will include wildlife crossings utilizing the existing openings at Griffy Creek, Beanblossom Creek, Beanblossom Creek Overflow, Bryant Creek, Little Indian Creek, and Jordan Creek. For more information, reference **Chapter 7**, *Mitigation and Commitments.*

Section 5.18 Figure Index

(Figures follow this index.)

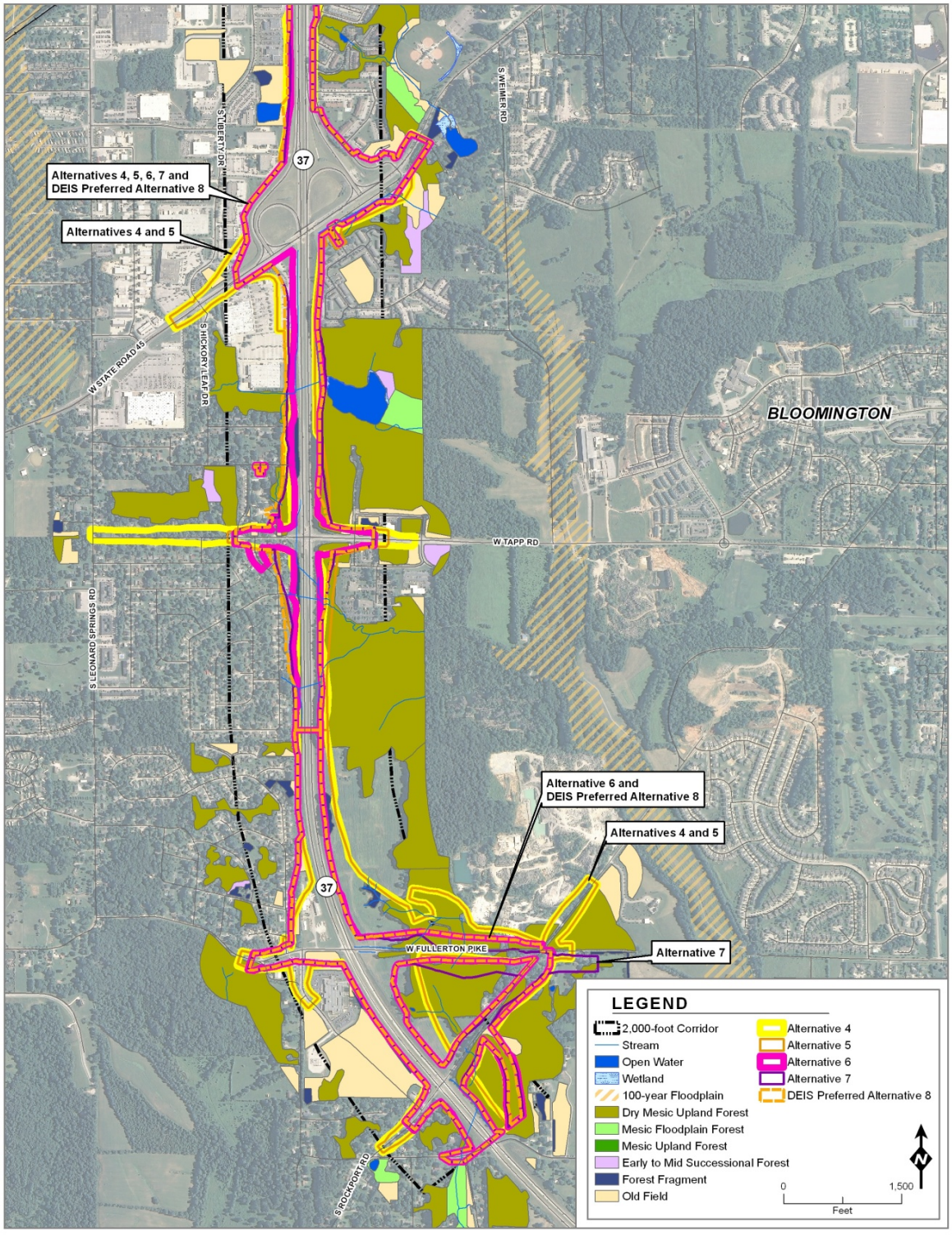

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 1 of 7)

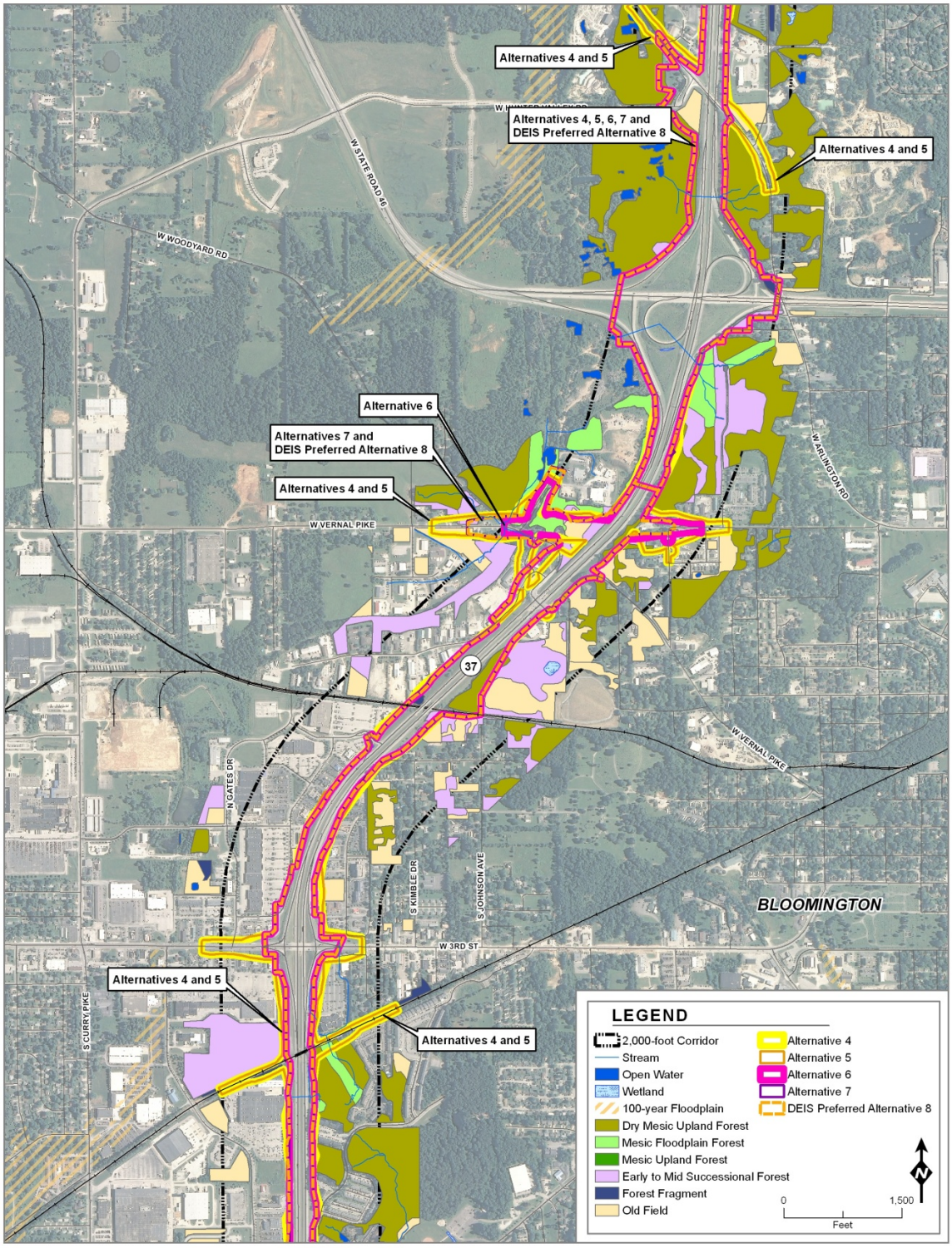

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 2 of 7)

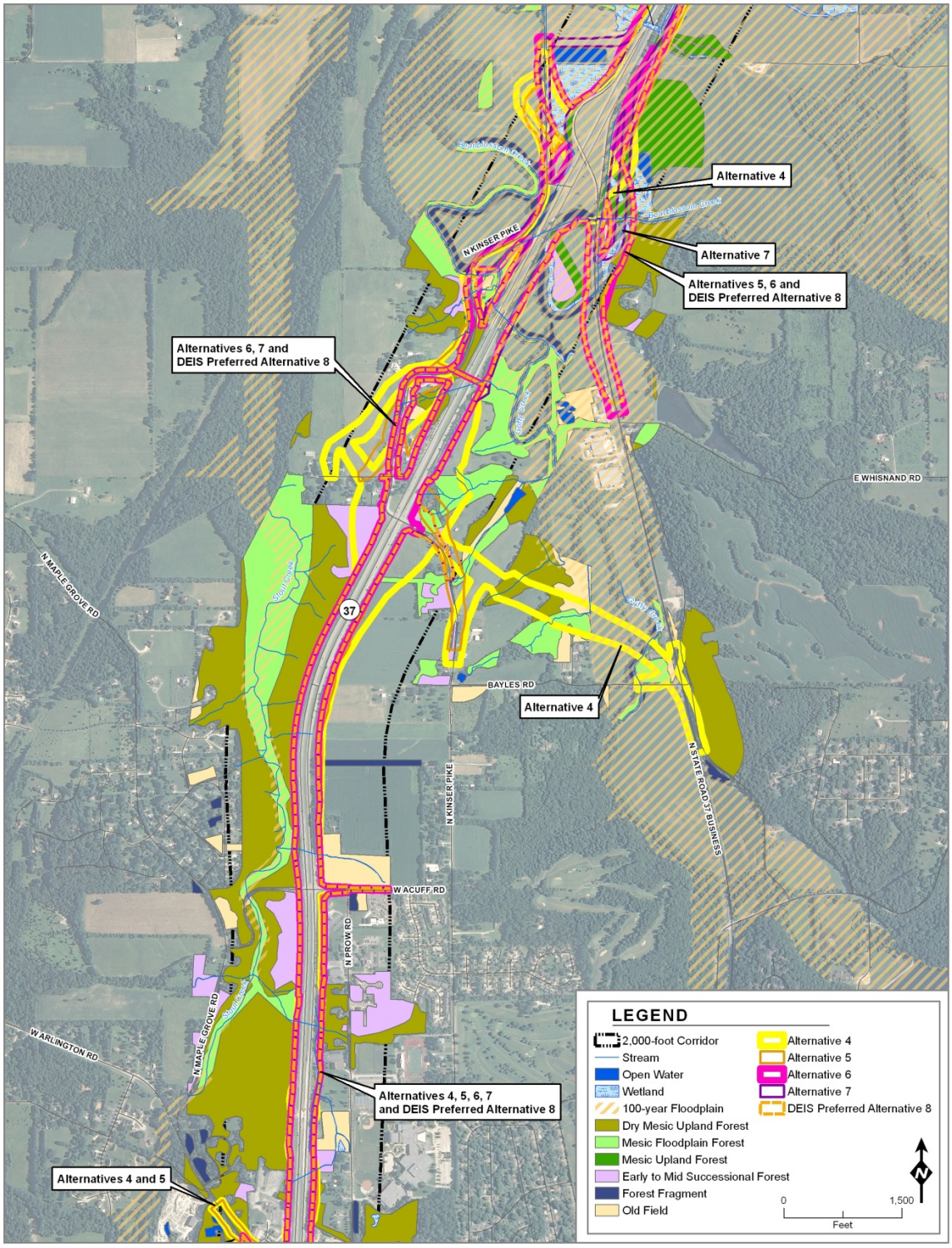

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 3 of 7)

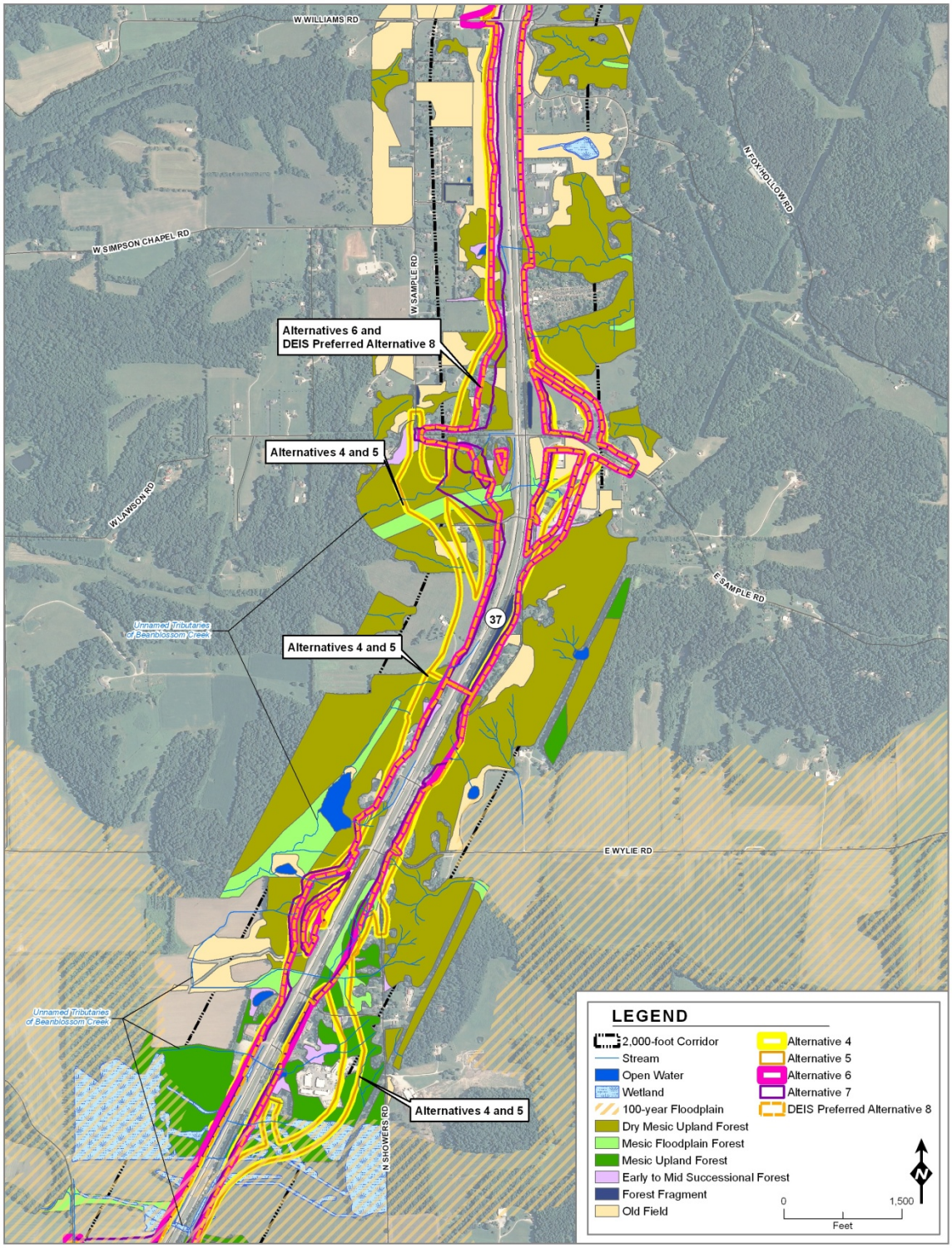

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 4 of 7)

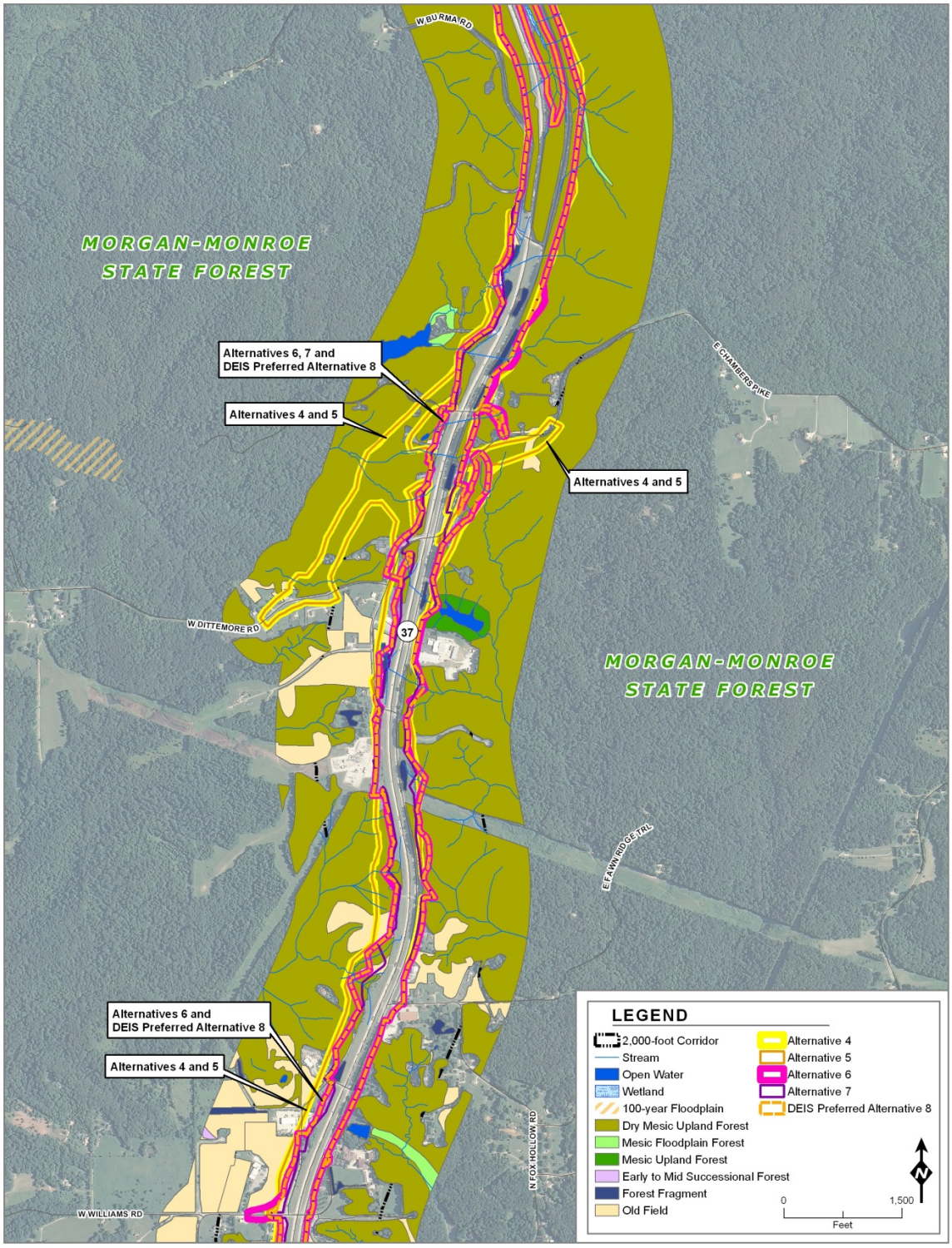

Figure 5.18-1: Potential Impact to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 5 of 7)

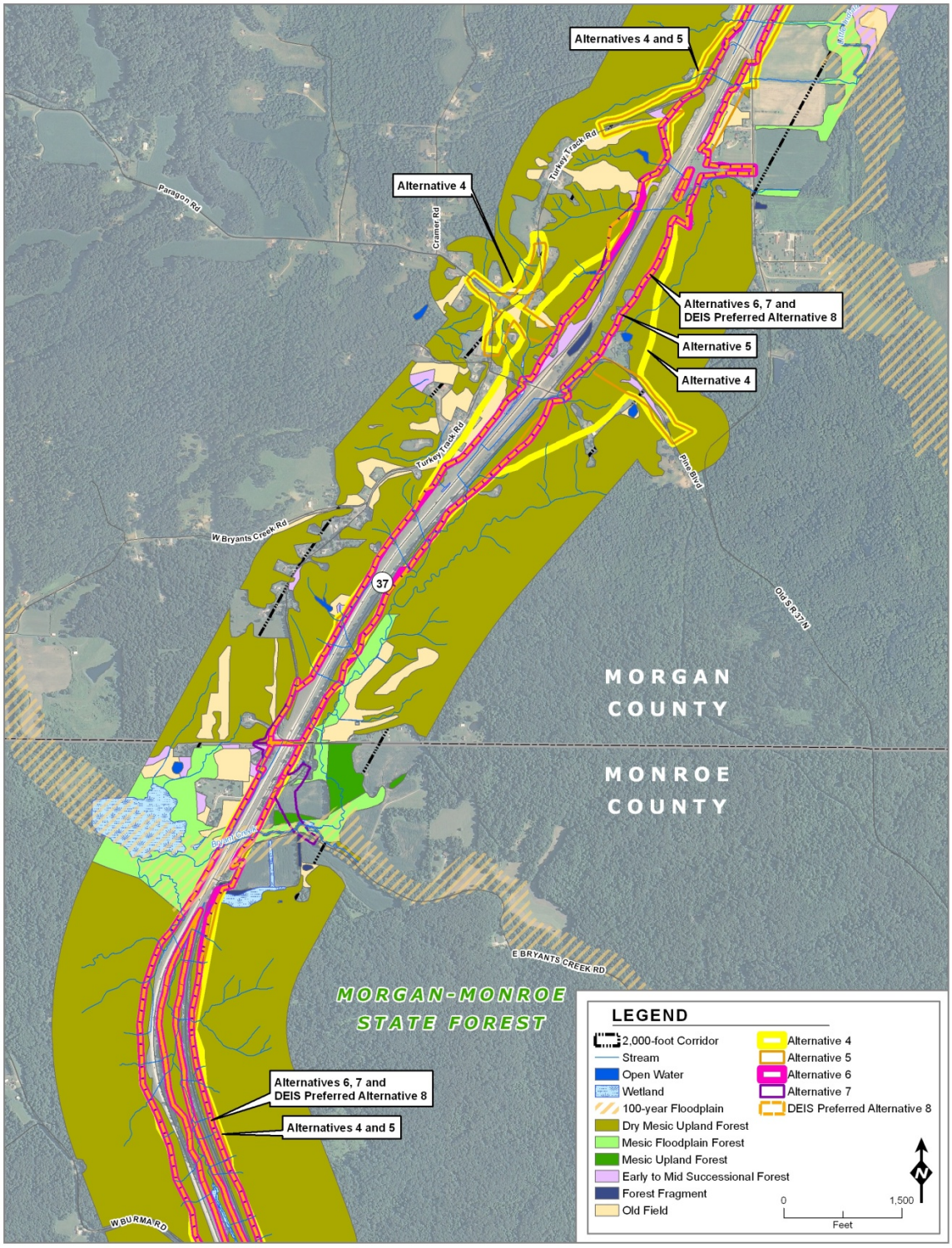

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 6 of 7)

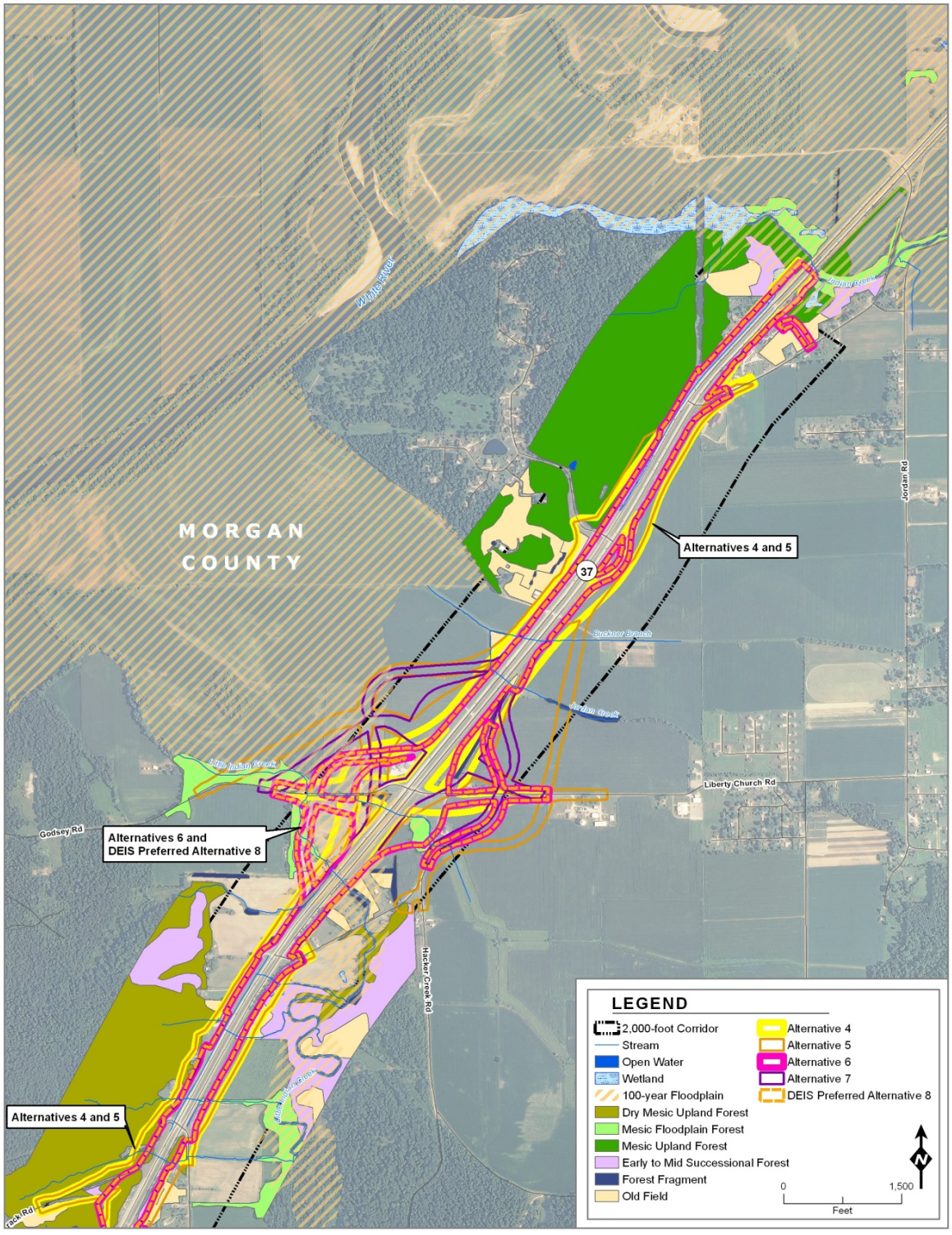

Figure 5.18-1: Potential Impacts to Wildlife Habitat in Section 5 for Alternatives 4 through 8 (Sheet 7 of 7)

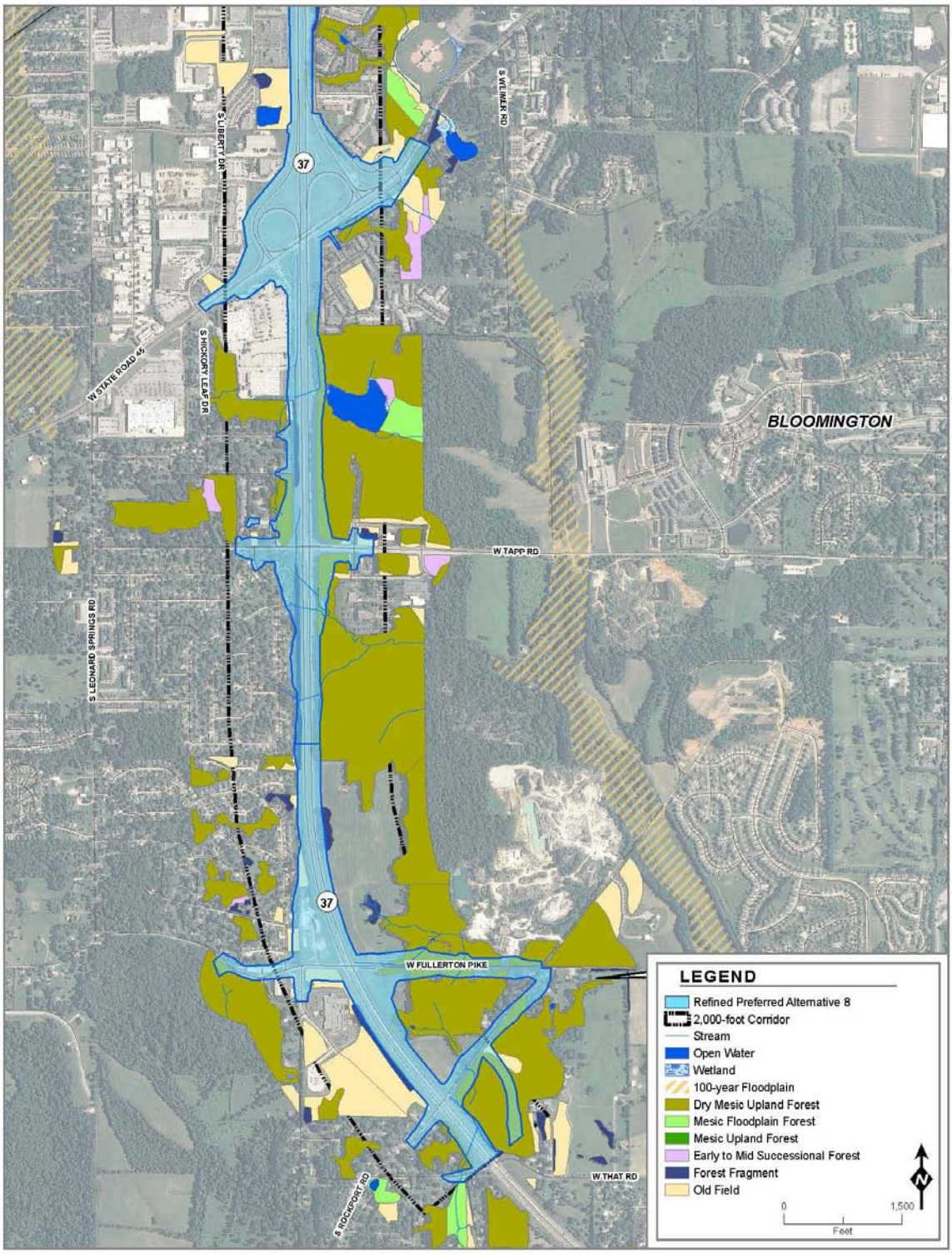

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 1 of 7

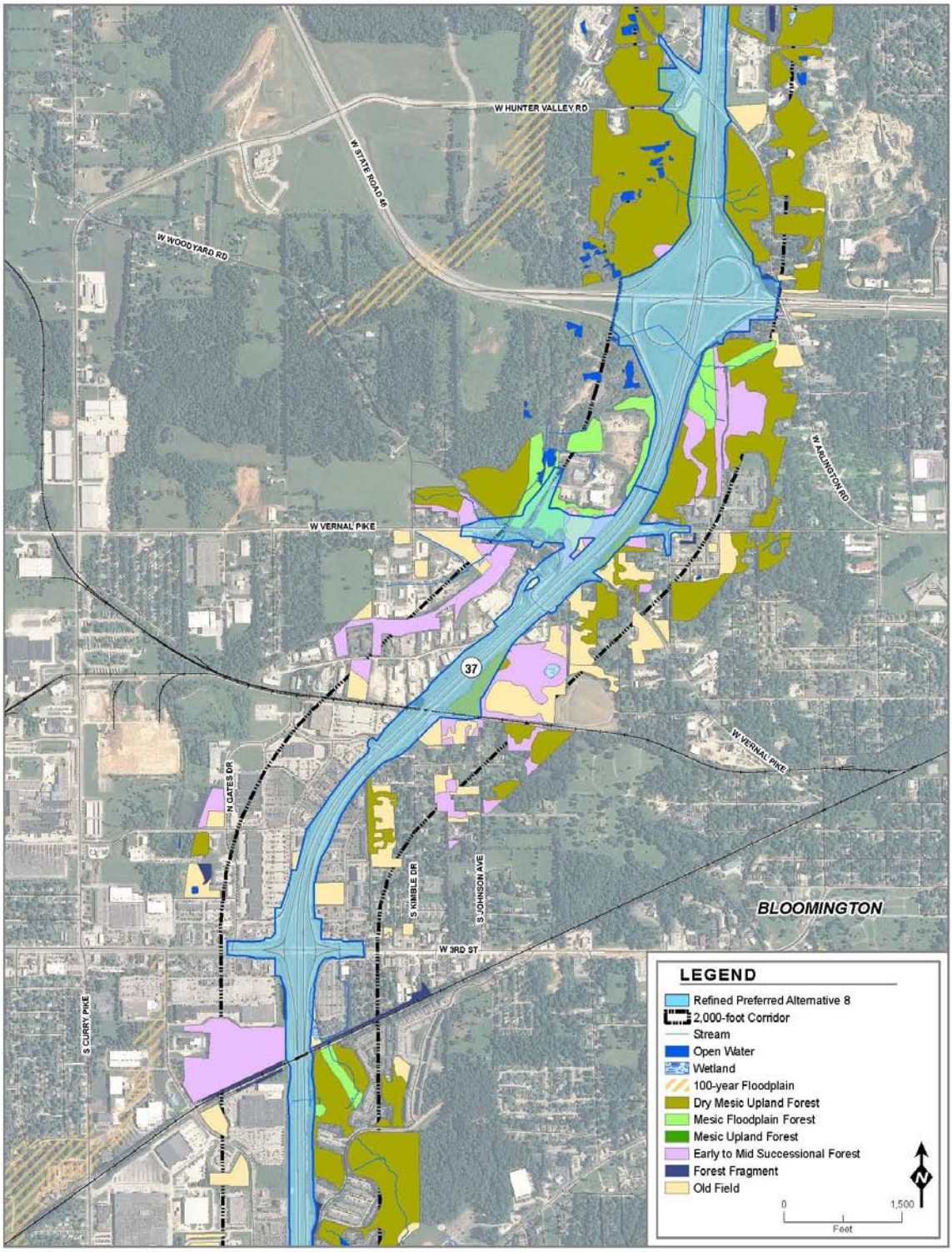

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 2 of 7)

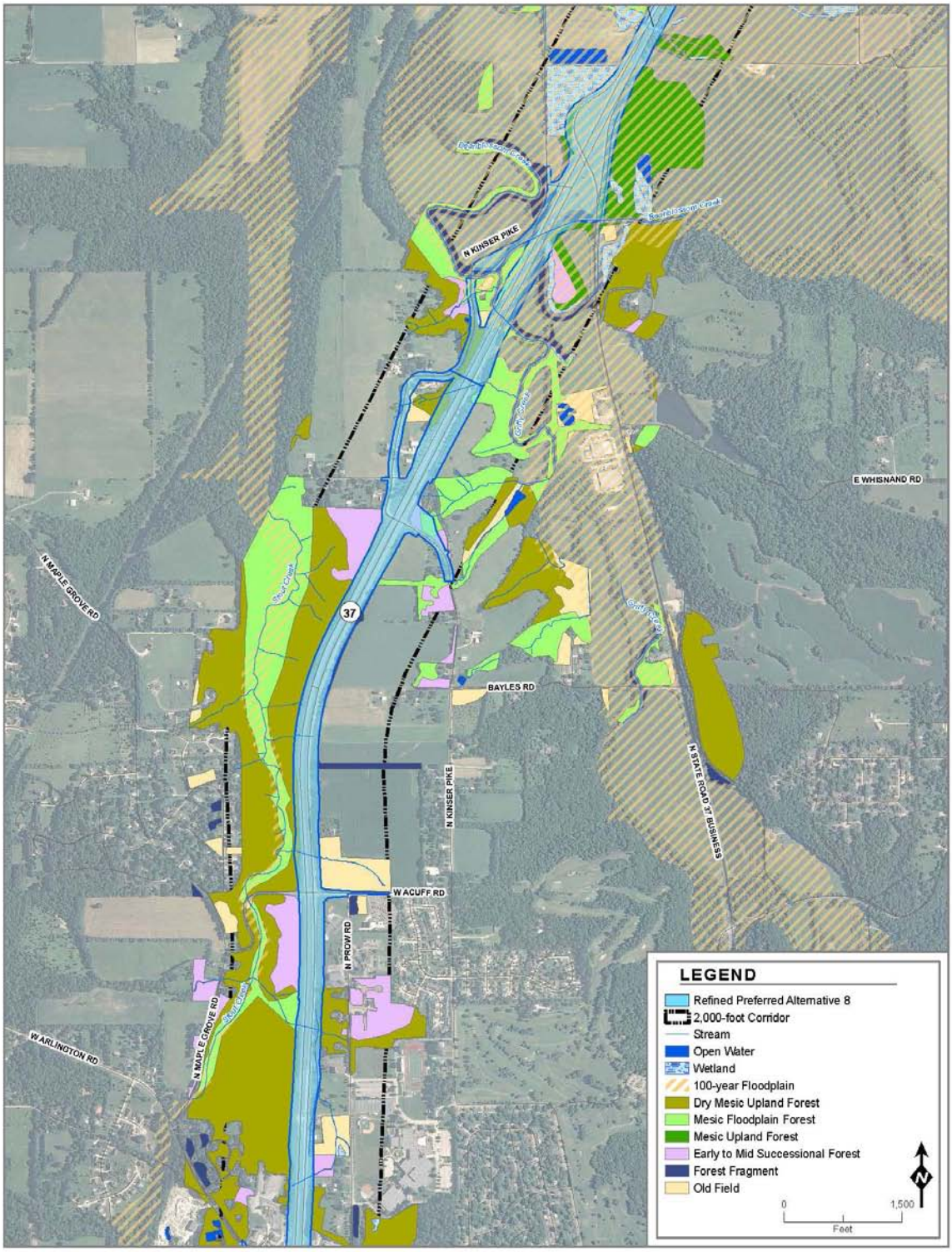

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 3 of 7)

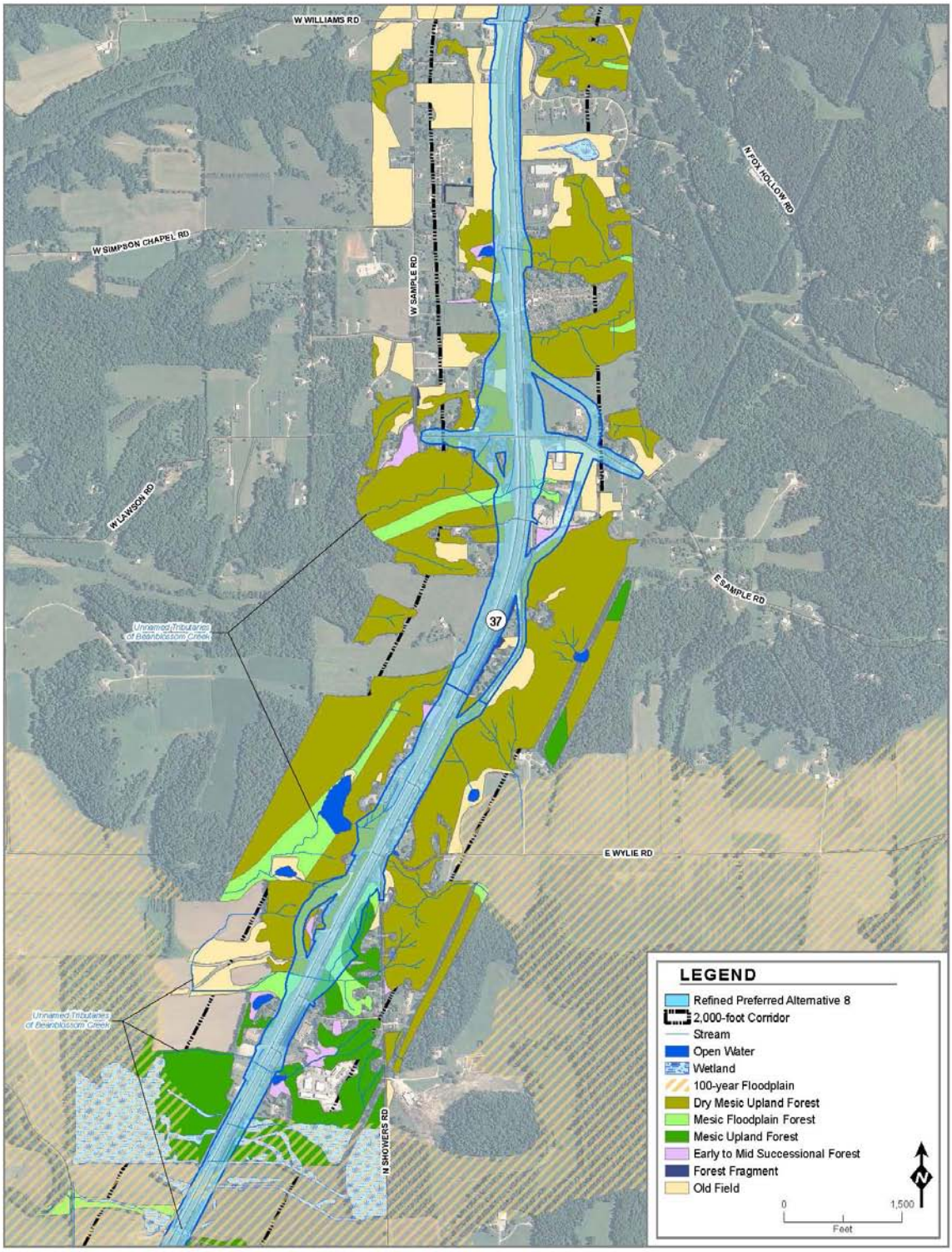

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 4 of 7)

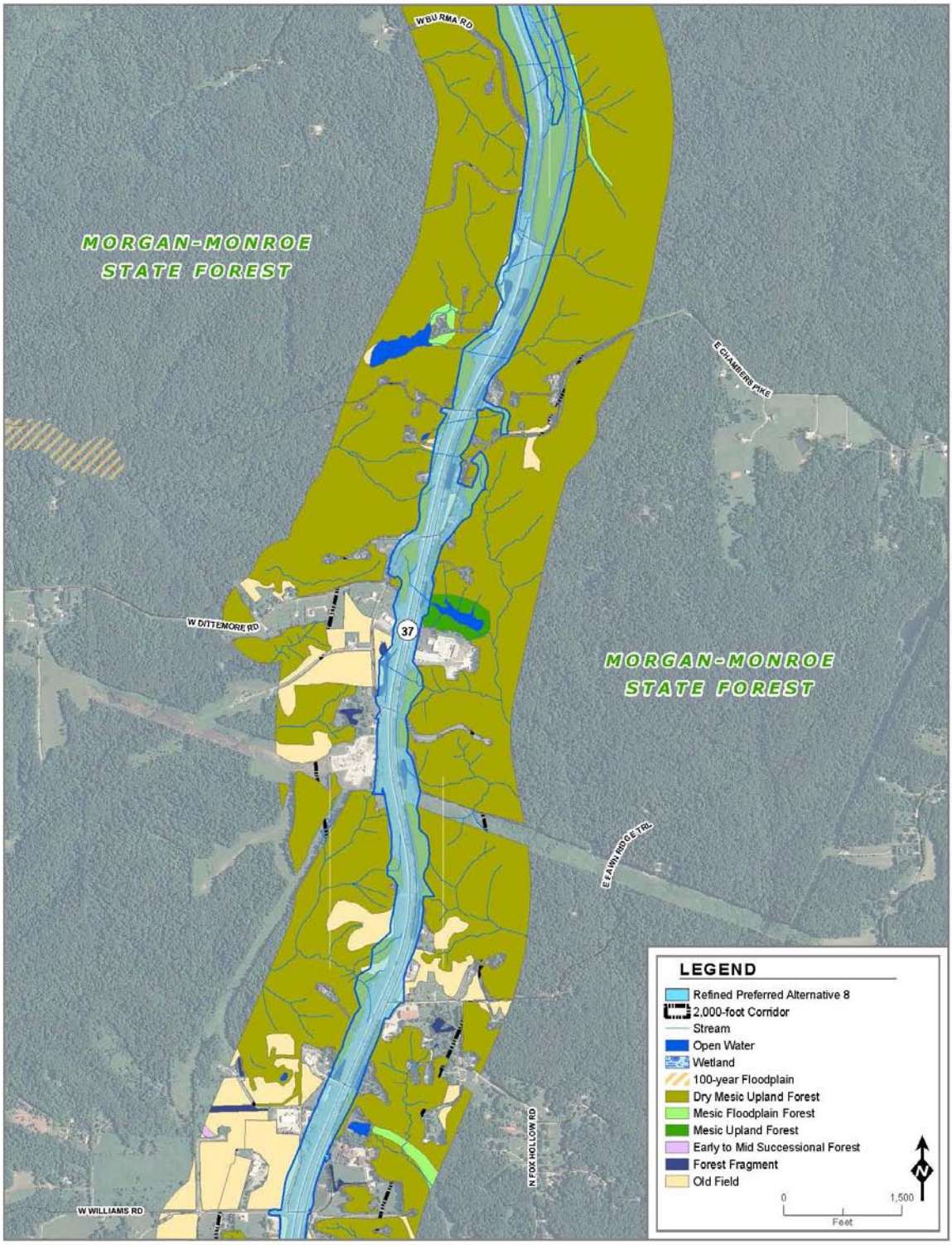

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 5 of 7)

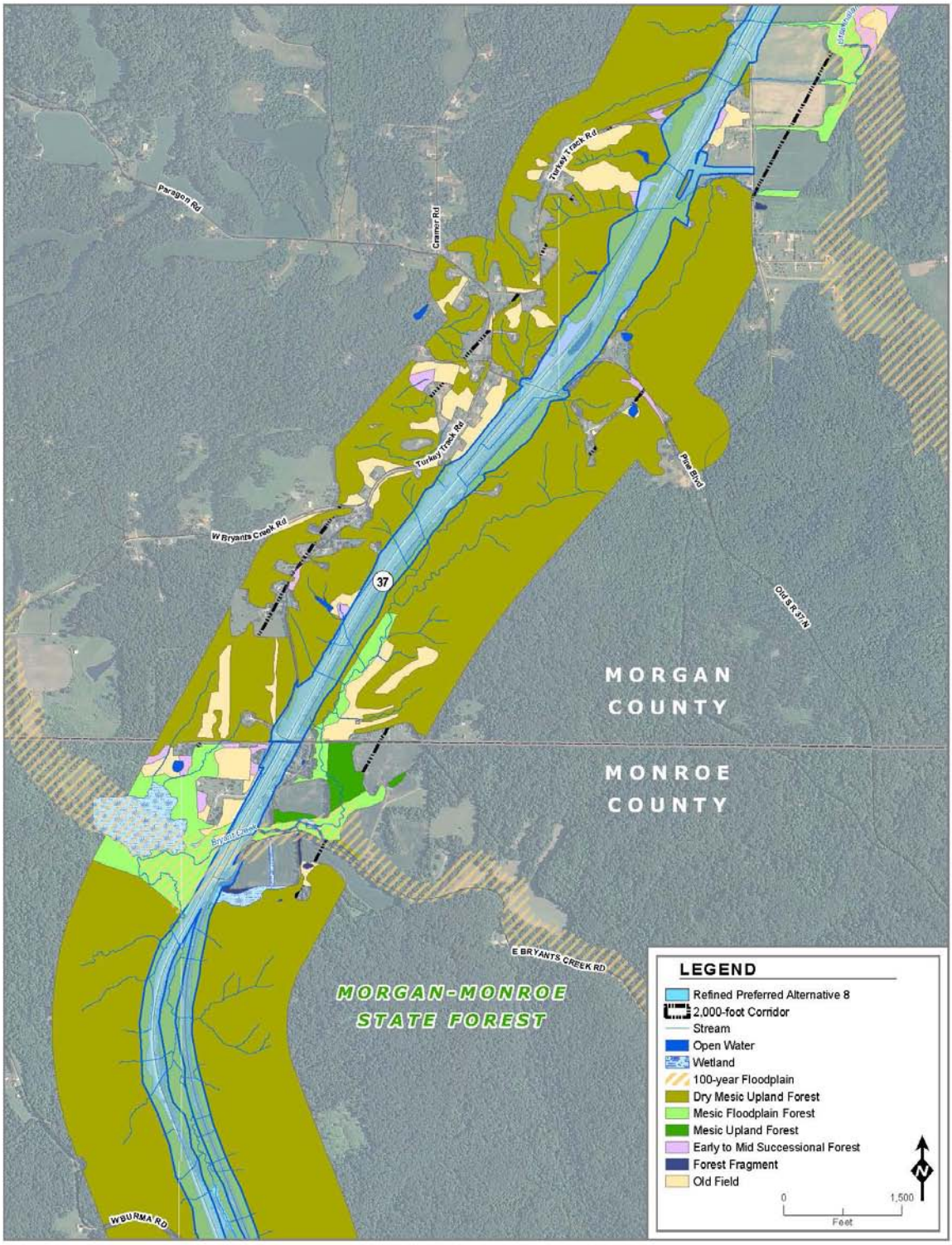

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 6 of 7)

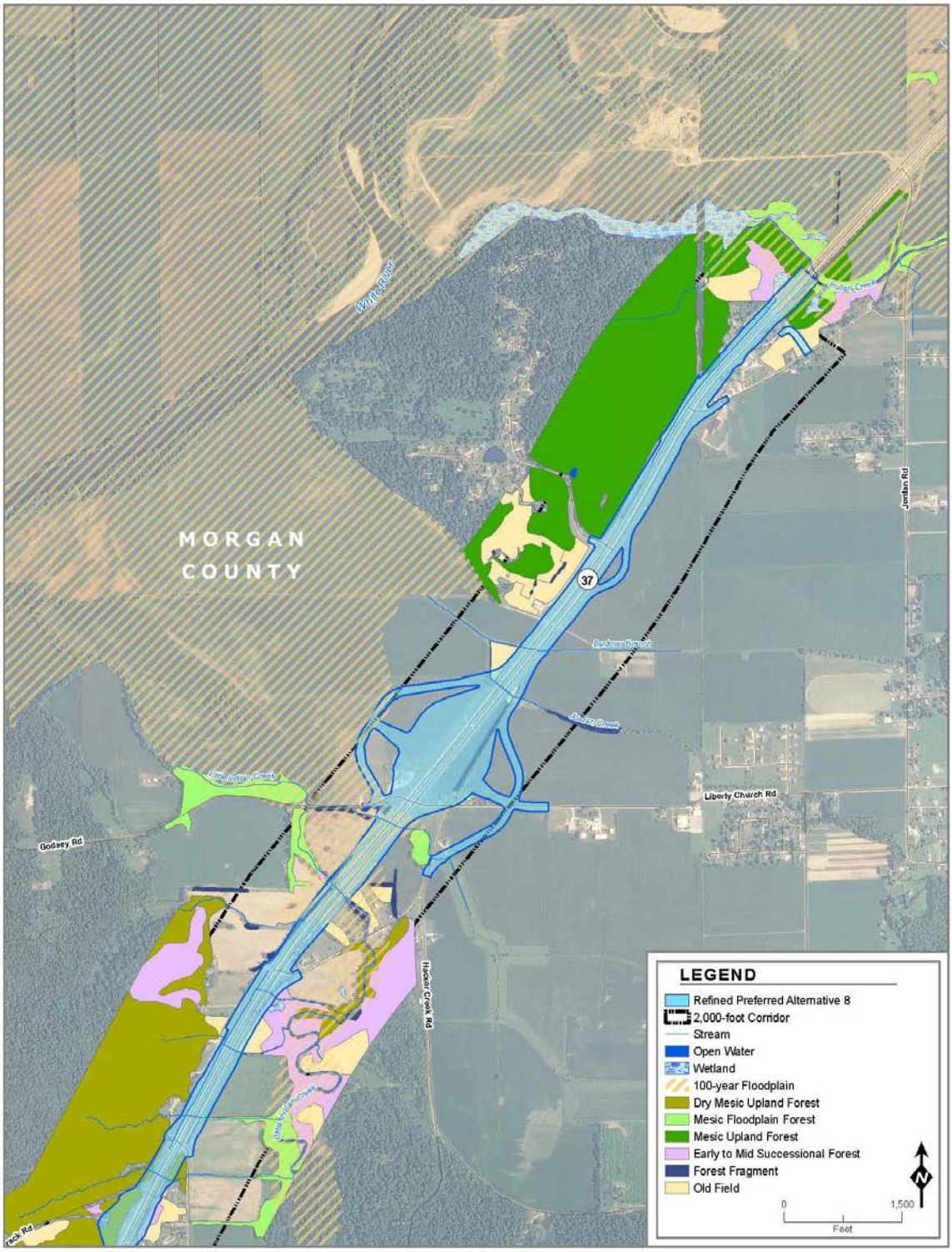

Figure 5.18-2: Potential Impacts to Wildlife Habitat in Section 5 for Refined Preferred Alternative 8 (Sheet 7 of 7)